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ABSTRACT

The purpose of this seminar, attended by 21 participants, was to examine issues, problems, and components of models for the evaluation of occupational education. A primary objective was to stimulate interest in evaluation as an object of research effort. Papers presented include: (1) "The Value Structure of Society Toward Work" by Arthur R. Jones, Jr., (2) "Measurement and Appraisal of Competencies" by William R. Grieve, (3) "Evaluation of Occupational Education: Identification and Measurement of Student Output Variables" by Charles M. Armstrong, (4) "A Conceptual Model for the Evaluation of Changes in Selected Personality Variables Through Occupational Education" by Joseph E. Champagne, and (5) "Program Planning and Evaluation" by Otto P. Legg. These papers served as a basis for small group discussions. (GEB)

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NATIONAL SEMINAR ON RESEARCH IN EVALUATION OF OCCUPATIONAL EDUCATION

JOHN K. COSTER
SEMINAR CHAIRMAN

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THE CENTER FOR OCCUPATIONAL EDUCATION
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NORTH CAROLINA STATE UNIVERSITY AT RALEIGH
1968

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PREFACE

The importance of evaluation to the development of sound programs of occupational education is something that all of us in occupational education can agree upon. Particularly, since the financing of occupational education programs must take into consideration the effectiveness of these programs, it is incumbent upon personnel in occupational education to address their efforts to developing operable evaluation techniques and methodologies. Despite the relatively high priority that has been placed on program evaluation, both by the Division of Adult and Vocational Research in the Bureau of Research and the Division of Vocational and Technical Education in the Bureau of Adult, Vocational, and Library Programs, in the U. S. Office of Education, evaluation has been an object of research by relatively few personnel in occupational education. This seminar was convened for the purpose of attempting to increase committment to evaluation as an object of research.

No great accomplishments can be claimed for the Seminar. No new theories of evaluation were evolved, nor were any new methodologies explicated. The intent was to examine issues and problems, and, in the small group discussions, to examine the components of models for the evaluation of occupational education.

The Center extends its appreciation to all of the participants at the seminar and particularly to the consultants who helped provide the common framework for discussion. Specific recognition is due Dr. Alan Robertson, Director of Evaluation at the State University of New York at Albany who represented the AVA Research Committee on the Planning Committee, and Dr. Harold Starr, Specialist in Evaluation from the Center for Vocational and Technical Education, The Ohio State University, who represented the Center for Vocational and Technical Education on the Planning Committee. A note of special thanks is also due the technical and clerical staff of the Center for Occupational Education for assistance in the editing and preparation of this report.

John K. Coster
Director

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INTRODUCTION

The National Seminar on Research in Evaluation of Occupational Education was a continuation of a series of research seminars in vocational education. The series was initiated in 1963 through the cooperative efforts of the Research Committee of the American Vocational Association, the Division of Vocational and Technical Education of the U. S. Office of Education, and cooperating universities. The first seminar was held at Purdue University in 1963, and research seminars in vocational education were held at the University of Illinois and Pennsylvania State University in 1964. In 1965 a series of four institutes was conducted by the University of Illinois under the provisions and support of Section 4(c) of the Vocational Education act of 1963. Other seminars were held that same year at the University of Nebraska, The Ohio State University, Michigan State University, and the University of Minnesota. In 1966 Cornell University received a grant to conduct six research seminars. These were held at The Ohio State University, the University of Georgia, the University of Illinois, Cornell University, North Carolina State University, and Colorado State University. No seminars were held during 1967. The seminar being reported here was conducted during 1968 and was sponsored jointly by the Center for Occupational Education at North Carolina State University at Raleigh, the Center for Vocational and Technical Education at The Ohio State University, and the Research Committee of the American Vocational Association.

The design, development, testing, and installation of models, techniques, and procedures for the evaluation of occupational education is a matter of pressing concern. Its need was enunciated in the Report of the Panel of Consultants in Vocational Education and its necessity was mandated by the provisions in the Vocational Education Act of 1963. Evaluation has been accorded high priority in the U. S. Office of Education, both by the Division of Adult and Vocational Research of the Bureau of Research and by the Division of Vocational and Technical Education of the Bureau of Adult, Vocational, and Library Programs. Yet evaluation has not received the attention of researchers in occupational education commensurate with its significance, and a concerted attack on the problem area has not been forthcoming. One of the objectives of this Seminar, therefore, was to stimulate interest in evaluation as an object of research effort.

The problem area of evaluation is large, complex, and a pressing social concern. Evaluation methodology presently encompasses both formative and summative evaluation and includes attention to the assessment of process as well as product. In order to realize the potential available in these methodologies, increased attention is needed to the development of strategies through which the evaluation function may be linked to the program development function. Society is increasingly placing demands on evaluators. Investments in occupational education have risen sharply in recent years, and with the increase in public spending there have come questions about whether these investments in human capital and resource development are producing increments in productivity, income, personal and social satisfaction, and the welfare of the individual and society.

The problem area of evaluation may be subdivided into a number of problems, which include the following:

1. The delineation of goals and objectives of occupational education. The goals and objectives of occupational education have not been succinctly stated and clearly defined. The process of stating goals and objectives requires attention to the process by which societal values and individual needs are translated into goals, the evaluation of alternate goals and their probable effect on societal and individual welfare, the cost of attaining the goals, the specific objectives to be attained, and the range of behaviors which may reasonably be expected to be modified through occupational education. In conjunction with the latter point, it seems logical to assume that specific programs of occupational education should result in a set of knowledges and skills which will enable the individual to perform at an acceptable level in an entry level job or family of jobs. Beyond this point, questions may be raised about modification of behavior in the non-cognitive domain, such as aptitudes, attitudes, personality attributes, and values. Prior to the point in time at which the individual begins preparation for a job or career, modification in behaviors is related to the processing of information about self and occupations, the role dimension of the structure of occupations, and the decision making process in the choice of an occupation.

2. The development of instruments for assessing behavioral change. A second problem deals with the development of instruments to assess behavioral changes. This problem involves the specification of behavioral objectives and the development, testing and validation of criterion-referenced instruments to ascertain whether the objectives have been attained. Instruments are needed not only in the substantive areas of occupational education, but also to evaluate the efficiency of progress designed to enhance the decision-making process.

3. The evaluation of outcomes of occupational education. In addition to instruments designed to evaluate the output (i.e., product) of occupational education, procedures are needed to assess outcomes. Output is used here to refer to what the system produces, expressed in terms of how well the individual can perform based on the criterion-referenced measures. Output, as measured by these instruments, is a predictive quality. Outcome refers to how well the individual performs on the job. Thus the outcome is the output confounded by the system's external environment.

The potential presence of confounding variables, which are related to the individual's personal, social, and work environment, mitigates against accurate assessment of outcomes. Research is needed here to resolve the inherent difficulties in outcome evaluation.

4. Strategies for program management. The usefulness of evaluation efforts is directly related to the strategies that are evolved for utilizing information in the management process. These strategies relate both

to program improvement (formative evaluation) and program effectiveness (summative evaluation). Thus far, limited attention has been given the design and development of strategies for information utilization. Thus a fourth problem in the sequence pertains to the design and development of information utilization procedures which will direct the design and utilization of evaluation studies.

The seminar did not address all of these problem areas. The first four papers dealt with (1) the value structure of society as a basis for the delineation of goals and objectives, (2) the measurement of competencies, (3) the evaluation of output variables, and (4) a rationale for the delineation of non-cognitive variables. The fifth paper presented an overview of the significance of evaluation. These papers served as a basis for the small group discussions which in turn led to the identification of issues and the clarification of problems in evaluation.

The seminar objectives were divided into two sets, substantive and operational objectives. These are listed below:

Substantive Objectives

1. To specify the behavioral outcomes which may be developed or changed through programs of occupational education, including vocational, technical, and practical arts education.

2. To specify strategies, models, and designs which may be utilized in assessing the effects of occupational education on development and change as manifested in the previously identified behavioral outcomes.

3. To design research programs directed toward the evaluation of products of occupational education expressed in terms of development and changes of behavioral outcomes.

Operational Objectives

1. To increase the number of researchers in occupational education who are committed to conducting research which may be used as an input onto the assessment of occupational education.

2. To develop a framework for a concerted and coordinated attack on the broad problem of assessing the effectiveness of occupational education.

THE VALUE STRUCTURE OF SOCIETY TOWARD WORK

by

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THE VALUE STRUCTURE OF SOCIETY TOWARD WORK[1]

INTRODUCTION

In social intercourse people, ideas, or subjects are never neutral in the sense of desirability. Preference for some objects and rejection of others and selection of one alternative course of action instead of another suggests a fundamental assumption about man and his behavior. That is, we are typically purposive and our behavior is in large part directed toward the attainment of one preferred state over another. Moreover, the objects, whether they be people or things, which are relevant to our various social fields are rarely if ever equally esteemed; man is not indifferent or somehow emotionally neutral, he is a creature characterized by his values. This is the case in all societies and groups and the functions of the values are highly significant to whatever social order they may be attached. In the course of living in the context of some pattern of social organization, our actions, and often situations which we must be part of, are not consistent with the values we hold. This is painful, for our expectations of what is desirable are unmet. When they harmonize there is a sense of satisfaction and accomplishment. On a larger societal level when values of subcultural groups are inconsistent beyond a certain tolerable level strains and tensions occur heralding the probability of some type of social disorganization.

The purpose of this paper is to relate certain values in American society to two of its most instrumental social institutions, education and work. Generally, this objective follows these questions: What are the values and what is the nature of their structuring in society? What are the consequences of values for work, for education? What is the relevance of these considerations for the purposes of evaluating vocational-technical education in the United States?

These questions appear at a critical time in the history of vocational-technical education which is experiencing an increasing growth and expansion, and not infrequently extreme pressures from political organizations and the lay public to solve what at times appear to be insoluble problems. Increased economic support and the resulting growth in the amount of service and administration have created a burden of organizational stress in many areas of vocational programming. Old concepts and traditions still bind many programs which, in the context of rapidly changing technological requirements and labor market needs, reduce the impact of the service of vocational-technical systems.

Many of the problems faced by vocational education are directly traceable to the larger value framework in society surrounding work and education. These values are deeply embedded in the fabric of American society, but may constitute significant barriers to the operation of many of society's programs. In addition to the function of values for individuals and groups, research in the area of values strongly points to the fact that values are themselves subject to change provided, of course, that certain changes in social structure occur. This is quite significant allowing realistic possibilities for considering the old and the new in vocational-technical education in relation to the social and cultural environment of which it is part. In short, approaching the last quarter of this century perhaps the major challenge for vo-tech programming in society, given its values for work and education, will be to capitalize on these values, and integrate them and the goals of vocational-education into an even more viable social service.

NATURE OF VALUES

The term value has an extremely widespread base as a common element of the vocabulary of all levels of society, lay and professional. Perhaps it is best defined, as Williams notes, as "preferential interest" invested in some situation, event, or object.[2] The term is variously used among professional people,[3] although with perhaps a slightly greater degree of definitional overlap. Even in the discipline of sociology which provides the basic frame of reference for this discussion there exists a lack of concensus.[4] The range of definitions requires at least some consideration of the concept in order to establish a common basis for communication when we talk about values. The purpose of this section is to propose a working definition of values and to discuss the concept calling attention to some of its nominal attributes.

Some Definitions and Distinctions

Conceptualization of the term value is often such that it is confused with other closely related terms such as motive and attitude.[5] In fact, it is not uncommon to find constructions in literature implying the synonymity of values and attitudes. Such gross usages only make more difficult the problem of developing a common body of reliable, scientific information on values in society. In this paper we will attempt to keep these usages apart. Motive states are essentially psychological in origin and function, as are attitudes. Values are social and cultural in nature, although significantly they reside in the individual's cognitive structure. That which is needed, or how persons feel about objects (in terms of psychological distance), is distinguishable from that which is deemed desirable. Here reference is made respectively to motive, attitude, and value.

Another conceptual dimension which leads to difficulty in discussing values is the distinction between cultural values and social values. Williams, for example, speaks of cultural values as all values which are shared by a group, the fact of being shared in common constituting the major criteria for so classifying them as cultural. Social values have the feature of not only being shared by group members, but also are regarded as "matters of group welfare ... "[6] Parsons' use of values is essentially cultural in that he considers them to be elements shared among actors in a "social system and that they function as criteria for selecting among alternative courses of action, or for choosing object A rather than B, as required of actors in a situation.[7] He also emphasizes that an actor's concept of what is desirable is learned, acquired in the process of social interaction.[8]

In his study of the impact of higher education on the values of college students, Jacobs defines values as " ... preferences, criteria or choices of personal or group conduct. A value in this sense is a standard for decision making ... normally identified ... in overt conduct" or verbally.[9] Scott defined value for his excellent study on values in an organizational context as a " ... moral ideal ... defined as an individual's concept of a relationship ... which he uses to assess the 'goodness' or 'badness,' the 'rightness' or 'wrongness,' of actual relationships that he observes or contemplates."[10]

According to Lundberg, values people hold can be inferred from their use of time and money.[11] In a much less strictly behavioralistic vein Kluckhohn asserts that "a value is a selective orientation toward experience, implying deep commitment or repudiation, which influences the ordering of 'choices' between possible alternatives in action."[12] They may be inferred from verbal expressions or from behavior. In a sociological sense value-orientations have been described as among the "stablest" and "most enduring" of the elements of personality. Parsons speaks of these as the products of socialization and emphasizes their relative unalterability in later years. Value orientations constitute the basic core of personality.[13] However, as Blake and Davis point out, in the hands of some writers the Parsonian emphasis on value orientation becomes dogma.[14]

An important distinction to be drawn at this point is that in the literature values have been described as inferrable from either verbal or overt behavior or both. Scott claims that we should "distinguish values from behavior ... and take as the best indicators of value the person's verbal profession of ideal standards of conduct,"[15] and his point is well taken. This is in contrast with the Lundberg definition which is quite behavioral.[16] A basic inadequacy of the behavioral position is simply that it is not always possible to equate action with value, as in the case of occupational status projections, or aspirations, and the actual level of occupational achievement. Aspirations reflect general cultural values in a society and are necessarily verbalized. Occupational achievement (behavior) at the level of one's aspirations is not a sufficient test of the validity of aspirations, *i.e.*, one's occupational behavior may not necessarily reflect one's values. Numerous factors, both personal and environmental, may operate to limit the range of opportunities and channels of mobility for significant numbers of society to an occupational stratum not implied by their values which, however, may be verbally expressed.

However, a reliance on verbal expressions to determine values people hold is not without methodological difficulty. The problem lies in the extent to which we can accept statements by respondents in studies as truly reflecting their real values. As Blake and Davis put it, "Can we ... take people's statements and reinterpret them to get at 'underlying' values? Yes, provided we make the questionable assumption that verbal statements inevitably reflect real values, and provided we admit that the process of symbolic reinterpretation in itself has no empirical controls and consequently may differ radically from one observer to another."[17]

One of the frequently recurring themes in this brief review of selected definitions, is that values are *criteria* or *standards* by which men identify and choose between alternatives. These criteria may be conceived of as standards, shared, but nevertheless varying according to intrapersonal and interpersonal considerations. Values remain, in this sense, subjective phenomena. A further important distinction is between evaluation, or valuing an object as merely pleasing or desirable, and criteria or standards used to make the evaluation. The distinction is one between the ordinary experience of placing a value on something and our usage that values are the criteria for deciding what we should want.

Derived from the above considerations the definition of values employed in this paper is as follows:[19] Values are the standards used by men in asserting preference for objects or specific behavior. Values are here defined as cultural inasmuch as they are shared. They also have social implications insofar as human behavior and interaction and group or collective welfare may be seen in relation to "common sets of standards." Values may be inferred from verbal expressions or overt behavior. In the latter sense, then, "values" are only constructs and have no empirical demonstrability apart from the phenomena from which we infer them. It is not unlike the psychological construct, need, which has no empirical referent, but has an important role in psychoanalytic and personality theory and the analysis of biosocial causation. Likewise, values are judged as useful because they allow the researcher to identify and meaningfully integrate certain empirically observable phenomena.[20] And in the focus of this paper the construct, value, provides an important basis for understanding man's occupational and educational motives and behavior.

Origins of Values

Because values are shared they are learned in the process of interaction. Thus the major socializing agencies of the society contribute to the transferrence of the "standards" of what is desirable from one generation to the next. The major forces in our society for this are, of course, the family system and the agencies of formal education. Family with its social class location imparts the values first internalized by the child and these typically reflect differences related to the different social classes. A most significant factor at this point is the early transferrence of parental values for work--its necessity, prestige levels of occupations, responsibility, success ideology, personal worth as related to achievement, etc.--all varying depending on the social rank of the family in the class structure.

In the educational system values developing in the child as a result primarily of interacting with adult and older family members may be reinforced or disturbed, new values may be identified for the first time or old values may be challenged, and replaced over time. Whatever the intrinsic advantages one might impute to education, in and of itself it remains a fact that the young person is inexorably pushed toward the primary expectation associated with the adult status he is approaching, work. In the process he carries with him an ever accumulating store of "standards" by which he identifies, explores, tries out and, finally, chooses one occupation out of several alternatives.[21] Regardless of whether he has chosen wisely his decisions in some way reflect a value system which he has built out of social interaction and which he shares with others who are part of his social and cultural frame of reference. It is this kind of organization and direction of behavior that our construct, value, implies. As already noted by Parsons, the intensity with which value orientations are instilled early in life often results in only minor modifications in the value orientation of the person as an adult.[22] Thus basic orientations toward work may follow a person through life with little change.

Another major social source of values which is of considerable importance in a relatively open society such as our own is the mobility process itself and the concept of anticipatory socialization. According to Merton, in the mobility process individuals who aspire to enter groups or stratum in which they hold no membership develop the cultural patterns and values characteristic of the group with which they are identifying. Anticipatory socialization thus involves adopting the values of a group to which one aspires with two resulting functions. It facilitates his inclusion into the group and fosters a more adequate adjustment following his acceptance.[23]

However, one of the insidious problems for the society in terms of anticipatory socialization lies in the generalized acceptance of cultural values related to achievement and success, particularly occupational achievement. Many people in the lower reaches of the class structure are denied access to socially approved or legitimate means of achieving the success goals pointed to by cultural values. Therefore, in order to achieve socially approved and desirable goals, an individual will sometimes resort to illegitimate or illegal means. Merton interprets much of the problem of criminal behavior in this fashion.[24]

The preceding discussion has already suggested the next major section of the paper, the relation of values to social stratification and through that, to much of man's work behavior.

Values and Stratification

A basic assumption for this paper is that human action is goal oriented.[25] In highly organized group life of today people participate in organizations or interact with others in order to achieve certain ends (guided by one's values). Goals range, of course, from simple friendship attraction to highly obligatory economic contracts. When behavior occurs it must be seen in relation to many kinds of physical objects, people, ideas, and so forth, all of which vary according to their basic instrumentality in facilitating the goal attainment process. Standards emerge by which components can be judged according to their durability, utility, etc., and as Parsons notes " ... given the process of evaluation, the probability is that it will serve to differentiate entities into a rank order of some kind."[26] Rank ordering of components of action moreover serves to differentiate between positions in different social structures, each position being associated with various levels of reward--economic, honorific, or psychic. The combination of rewards for any position constitutes its "value" and from that the prestige of the position.[27]

All societies have some system of stratification[28] whereby normal and "legitimate" social discrimination is provided for various categories of its members. As indicated above the criteria for evaluation become differentiated on the basis of class lines. Inevitably, such evaluations result in the ranking of people, groups, and other forms of social organization from high to low, each rank possessing more or less of the desirable social and economic attributes, e.g., health, material level of living, membership in organizations, opportunity for advancement, relative satisfaction with "things as they are." Such a system of stratification after it is established also functions to allocate available societal rewards according to one's rank in the system.

It is in this sense that socialization to given class oriented values provides different outlooks and perspectives of what is desirable or worth seeking after for members of the different classes. The differences in values between the strata of the class system have been well documented.[29] Among the important values which vary according to social class are those having to do with occupations and work behavior. This is not surprising inasmuch as occupation in American society has consistently been identified as one of the primary "indicators" of social class, i.e., occupational classification is always highly correlated with position in the class system.[30]

The significance of this in terms of the standards used by members of the different classes to evaluate work chances is clearly seen in the general meaning attached to work activity by most people in U. S. society.[31] One of the striking features about work in American society is the extent to which people define their ego, self concept, or sense of personal worth in terms of it. Thus, in many types of work, where opportunities for entry are partly a function of social class, there is a merging of definitions of self and definitions of the normative content of the occupation. Ontologically, a man is his work. This is reflected in many responses to queries in the form of "I am a doctor," "I am a scientist," "I am an educator," "I am a brickmason," or "I am a mechanic." Such definitions become part of the way we see ourselves and the world around us.

Historically, man has not consciously been concerned with meanings of work. In tradition bound primitive societies work is part of everyday life routines, intertwined with the totality of the institutional fabric of the society. It is hereditary, ascriptive, and attached to given positions in the structure of the community. Primitive man does not differentiate work from other aspects of his society.

For modern man, however, there is an objective rationality to work, and to ask its meaning of him is not an unreasonable request, for society provides a generalized expectation for man to be able to formulate and derive some pattern of meaning from work apart from all other aspects of his life. Yet it is precisely at this point that the imputation is made by some that modern work is such that for many it is not possible to derive much satisfaction or intrinsic meaning from work activities, especially at the lower ranks of the occupational hierarchy. The meaning of work varies considerably depending on the occupational level and social stratum. A significant theoretical development given this condition is the emergence of a literature focusing on the alienation of modern man from society,[32] and especially his work.

It is necessary at this point to look more closely at the structure of work in American society and its relation to values.

VALUES IN THE U.S. TOWARD WORK

For the purpose of this paper work is defined as activity related to the central problem of "making a living." The extreme division of labor and specialization and the fact of work being separated from place of residence clearly justify defining work pragmatically and operationally in this manner. Industrial and preindustrial societies differ markedly at this point as intimated above. In the latter type of social organization work activities are not distinguished from other role functions and activities. In such societies " ... work tends to be an almost undifferentiated part of the routine of life, inseparable from religious ceremonial, the duties owed other members of an extended family, and what we would call play or leisure."[33] In contemporary society man is clearly set apart from his traditional brother on this account.

Major Values for Work and Occupational Orientation

Given the open system of social stratification of American society, competition for rewards has flourished, and inherited reward and position has been minimized. In this kind of social milieu it is not unlikely that cultural values emphasizing personal achievement and success have developed.[34] Moreover, these values have become mixed with ideas of personal excellence. The implication of achievement is success which is interpreted in the personal equation as worthiness. Unfortunately, invidious comparisons emerge wherein the less "successful," the downwardly mobile person "just doesn't rate up" to his achieving neighbor. The comparison is invidious because achievement values tend to result in compartmentalizing humans rather than seeing them holistically. The individual is not viewed as a whole personality but as more or less successful in the area of his life circumscribed by work activity.

Achievement values typically associate occupational success with higher levels of income. As Williams states, "In a society of relatively high social mobility, in which position in the scale of social stratification basically depends upon occupational achievement, wealth is one of the few obvious signs of one's place in the hierarchy."[35]

Another basic value espoused by Americans is represented in work itself. "Disciplined activity in a regular occupation is a particular form of this basic orientation."[36] This orientation is the curious result of a set of earlier religious--now somewhat vestigal--influences and the particular rigorous requirements of the early history of settlement of the U. S. The protestant ethic which Max Weber called attention to[37] had to do with the association between religious ethics and work ethics as the former were gradually absorbed into the latter. In the Calvinistic period analyzed by Weber salvation and grace were exemplified in secular work activities in terms of a "doctrine of works."[38] These ideas were part of the "transplant" of culture that occurred with immigration of Britains and Europeans to this country early in its history. Thus the value of work and associated activities reinforced by religious sanctions accompanied many of the early settlers whose very existence and group survival depended on diligence and disciplined activity. There was no place for aristocratic traditions or disdain of manual labor in the wilderness. These conditions and requirements in conjunction with a wide range of untapped resources and later the developing system of commerce provide the stimulus for values emphasizing work activity, achievement and economic success.

Prior to the period of rapid industrialization, especially after the Civil War, there existed a kind of social order with underlying value premises which Robert and Helen Lynd wrote about in their classic study, Middletown. They reconstructed a picture of Middletown prior to its industrialization in which skilled crafts were on an equal par with the small middle-class businessman. Equality was on a political, social, and economic level and Lynd spoke of occasional envy of businessmen toward craftsmen in reference to desirable features of the craft mode of work organization. There was no highly exaggerated pattern of residential segregation and above all, perhaps, the craft organization provided a "career" for its people in terms of movement through the apprentice and journey levels to master.

But the Lynds noted that partially as a result of industrialization change was wrought in the system of stratification and in the associated values in a relatively short period of time. What they observed in Middletown was the beginning of a process of organization that emphasized bureaucratization, hierarchial patterns of authority, new income differential for managers and workers, new skill requirements due to technological innovation, a decline in craft organization, increasing residential segregation between workers and those in business, worker adoption of consumer values, and the pushing of their offspring to higher educational attainment in order to secure better jobs.[39] As the social order became more and more specialized and differentiated, as manual labor lost its connection with the control of private property, and as differentials of wealth and power crystallized, manual work as such was devaluated.[40]

Concomitant with the devaluation of manual labor as expressed in the values of society there has been an increasing valuation of white-collar types of occupations, especially the professionals and management, and science and technology which are exploited and manipulated at the upper occupational levels. The professions and other white-collar positions are attractive and desirable because of income, prestige, level of autonomy, and degree of "intrinsic" satisfaction with the occupation through the career line and over time. About science, Williams writes:

> Very broadly, emphasis on science in America has reflected the values of the rationalistic-individualistic tradition. Science is disciplined, rational, functional, active; it

> is congruent with the "means" emphasis of the culture -- the focus of interest upon pragmatism and efficiency and the tendency to minimize absolutes and ultimates. The applications of science profusely reward the strivings for ... mastery of the environment. We think it fair to say that science is at root fully compatible with a culture orientation that attempts to deny frustration and refuses to accept the idea of a fundamentally unreasonable and capricious world.[41]

Values and Aspirations

The values held for these occupations and for science constitute the criteria for making occupational status projections by many Americans. Patterns of aspiration generally reflect idealization of upper occupational strata regardless of the social class of the one aspiring. Differences in aspirations by social class are typically expressed in degree rather than kind. This is indicated in a current analysis of data on low-income populations in the Mississippi Delta being conducted by this writer. Negro household heads in the sample have low statuses, but aspire to upper blue-collar and lower white-collar occupational statuses. They aspire for their sons to lower white-collar and upper white-collar statuses. However their stated expectations for their sons are for jobs very near the low statuses they (the household heads) currently occupy.[42] Similar findings are reported in reports on low-income southern populations based on a large cooperative research project.[43] In a relative sense, then, lower socioeconomic populations are not unlike middle and higher socioeconomic populations in stating their occupational preferences.

Nevertheless there are structural variations in the values espoused for the higher occupations. Generally urban populations express occupational aspirations at a higher level than do rural populations.[44] Rural youth do not have the same probabilities of experiencing many occupational alternatives as do their urban brothers. Historically, rural youth have tended to be drawn into the labor force (farm) at an earlier age than urban youth, which is a limiting condition on the expectation to express serious aspirations beyond that point. In addition, aspiration-achievement values of rural youth are limited in other ways.[45]

Aspirations also vary according to social class[46] and on this basis according to education[47] also. Level of educational experience in the context employed here is generally influenced by class norms and opportunities. Family influence has been found to be related to level of aspiration.[48]

The fact that so large a percentage of blue-collar workers express a desire for white-collar types of work and that there is a transferrence of this value to their offspring calls attention to a question frequently asked, viz., Why is this the case? Why do some semi-skilled operatives and many skilled workers hold such values when often their own incomes presumably exceed those of white-collar workers and they, more frequently than white-collar workers, own their own homes? Might we reason as does

Hamilton that "There is no reason to assume that 'clerical and sales' workers constitute a reference group for skilled workers, let alone a positive reference group,"[49] based on perceptions which workers are alleged to have? Hamilton analyzes data from the 1960 U. S. Census: 1/10,000 Sample and after instituting certain controls--he excludes women, young people, students and the aged, and compares the core male household heads employed in clerical-sales work and in skilled work--he presents a conclusive argument which supports general values of the superiority of white-collar over blue-collar work on the basis of income, mobility potential and, therefore, life chances.

Exactly what standards people use to describe their orientation to work, or their choices for certain types of work have been analyzed by Rosenberg. Rosenberg identifies three complexes of values based on his analysis of data from more than 4,500 college students. He indicated the existence of a selection process in which one articulated certain kinds of work on the basis of one's values; although for a minority values were found to change to be congruent with occupational choices after the choices had been made.[50] The value configurations identified in his study are those which center on (1) helping--receiving gratification from relationships with others; (2) extrinsic rewards--instrumental, income, and buying power of job; (3) self expression--work as a major possibility for creative expression of talents and abilities.

Occupational Prestige

Another basic dimension of the relationship between social values and work is the organization of the occupational structure (See Appendix A for an overview of occupational structure in the U. S.) into a prestige hierarchy, with those occupations at or near the top of the hierarchy receiving the disproportionately large number of aspirations. Occupational prestige has been studied many times over the last decade,[51] and an excellent review of these materials and others on occupational prestige is available.[52] A cross-cultural study of prestige has been conducted, finding generally that prestige ranks of matched occupations are highly correlated[53] despite cultural differences among the countries (United States, Great Britain, Japan, New Zealand, Germany, and the U.S.S.R.). The authors feel that the findings are due to universal features of industrial-occupational system which give rise to consistent evaluations of prestige across cultural boundaries.

The classic study of occupational prestige was conducted by North and Hatt and sponsored by the National Opinion Research Center, then at the University of Denver. First results were reported in 1947,[54] however, due to the retirement of one and the untimely death of the other, the major analyses of the data appeared later than ordinarily would have been the case.[55] The data were updated by Hodge, Sigel, and Rossi in the early 1960's.[56] Comparison of the two sets of prestige rankings over a sixteen year period reveals essentially little difference. (See Appendix B). In these rankings the jobs most valued according to the level of esteem or prestige attributed to them are those which feature highly specialized training and those which emphasize an extreme degree of responsibility for the general welfare of the public, *i.e.*, the legal, jurist profession, medicine, science, politics, teaching, and other professional-managerial occupations. Those least valued are typified by jobs such as janitor, bartender, clothespresser, soda jerk, garbage collector, shoe shiner, etc. The implications of such a scale for vocational-technical education and training are considerable.

VALUES, WORK AND EDUCATION

The role of education in understanding the value structure of society toward work cannot be overlooked. We begin with the assumption that in a given society, or locale, education will always reflect, to a high degree, the prevailing values of the area.[57] Therefore, values from one school to another may vary (1) as the values of the community vary and (2) according to the value-patterns of the dominant social class represented by the modal class which the school serves. But, the variation is minimized due to (1) the relatively homogeneous social origin of and training situations for teachers and (2) because generalized educational values tend to be diffused quite widely throughout the society.[58]

The principle of stratification, extended into the school system, itself functions as a limiting and selecting factor for the students in the system. The dominance of middle class values for lower socio-economic children and the implications of this are cited by Hollingshead in his youth study.[59] He writes:

> From interviews and attendance at Board meetings it became clear that the question of cost was uppermost in their thoughts whenever any innovation was suggested. The problem of cost versus educational values was particularly acute whenever the high school was involved. ... They believed that many boys and girls who were in high school would have been better off on the farm or at the Mill. No Board member was found who at any time believed that it was the responsibility of the community to provide educational facilities for *all* high school aged adolescents. When it was suggested that the traditional type of high school education might not be the type needed for the lower classes, the suggestion was countered usually with the argument that vocational education cost too much per student to be put into effect on a broad scale; besides the boy and girl could learn the same types of skill 'from life.'[60]

And similarly in their studies of adolescent character and personality, Havighurst and Taba note:

> The moral values of the adolescent peer group culture are largely middle-class standards set by the high school, which is, in turn, run by people with middle-class values. The teachers are nearly all middle-class and so are the parents who are most active in high school affairs. Finally,

> the dominant adolescent group in the high school is composed mainly of middle-class boys and girls.[61]

The above statements indicate how the value patterns of the local community may come to rest in the school through the stratification system. The situation reflects the general value dominance of the middle-class who because of their higher social rank and characteristic social participation are more characteristically involved in the important decisions and actions which reflect the values and goals of that class. It may be seen as a function of differential power between the lower and higher classes.

The general question of how values are reflected in education is succinctly put by Williams. They are reflected in the content of educational curricula[62] and guidance into one alternative track versus another, _e.g._, college or vocational. This theme, that is, the extent to which certain school values enter the decision making process of administrators and counselors in "controlling" the future of certain students is brought home clearly in Cirourel and Kituse's report.[63] Leading from this, therefore, is a second value which has to do with "the choice of students to be exposed to educational efforts."[64] Obviously, the value of achievement and excellence in performance are important criteria in student selection. What are the values, however, for underachievement and poor performance and school attrition? What mechanisms in society are available to deal with these elements of our population in terms of their development and integration into the labor force and productive citizenship? These seem to be appropriate questions at the present time when educational programs including vocational-technical and OEO programs are guided by values which sometimes exclude important elements in American society from educational consideration. This contains negative implications for the so-called democratic egalitarian ideology of mass public education. High performance is rewarded, average achievement tolerated but low achievement is devaluated along with the low achiever.

It is not unlikely that an emphasis on higher education has developed in our society in the context of technological change, requirements for expertise and new skills that can only come through extensive training, and general cultural expectations regarding the increasing normalcy of collegiate experience. Whereas earlier, secondary school was commonplace and higher education the prerogative of a small elite, today education through the baccalaureate level is increasingly a functional requirement for an individual's entry to certain occupational levels. Davis aptly points out that the bachelor's degree "is the entry point into the top layer of our occupational structure."[65]

The value of higher education and higher occupational pursuits is reflected in much of the research literature analyzing education and work in relation to values. The point to be made is that there is an implicit bias emphasizing higher education and white-collar jobs to the exclusion of vocational-technical education and typical blue-collar jobs.[66] The ranking of educational systems according to prestige level, and on values people hold for different types of education has a number of implications. The functions and dysfunctions of the prestige of organization have been suggested by Perrow. These include: explicit, unrealistic assessments of situations; unidirectional mobility pattern, usually upward; rewarding equal performance unequally; exaggerating the importance of the high prestige organization at the expense of the low prestige organization; hampering recruitment of competent and highly qualified personnel in low prestige organizations; and hampering maintenance of top level people in the organization.[67]

In this section we have tried to suggest (1) that the general stratification system of a given community, and through it, values, pervades the organization and structure of education in the community; and (2) that values people hold toward education result in a popular ranking. The significance of this ordering can be seen in terms of organizational problems: personnel recruitment and maintenance, student selection and maintenance, distribution of economic resources, distribution of physical facilities, etc. Taken together we imply that as all the relevant variables fall into place we have an educational system structured somewhat variably from place to place, but nevertheless constituting more and more the essential mechanism in our society for effective movement into the world of work. Exposure to education helps to instill the basic value structure of a society for work in the cultural orientation of the student. Moreover, the student envisions his own place, depending upon his social class, as it has been defined by society.

SUMMARY AND IMPLICATIONS

The value structure of society for work has developed in terms of two basic concepts, value and stratification. Value was defined as the standards used by men in asserting preferences among alternatives. Values are shared, therefore are cultural, and are patterned. They may be inferred from either verbal expressions or overt behavior. Values are built into the social stratification system inasmuch as the system of stratification is a valuational phenomenon based on the institutionalized ranking of certain items or characteristics of populations. Occupational activity constitutes one of the primary indicators of social class and, therefore, different kinds of work are variously valued depending on the social stratum to which it is primarily linked.

Several dimensions of the value structure of work were explored. These included the idea of achievement and success, particularly as reflected in aspiration behavior and occupational prestige ranking. Specific value orientations for work (helping people, opportunity for self expression and work for extrinsic income reward) were reviewed.

The value structure of a community pervades its educational institutions and constitutes a major social mechanism which further inculcates certain values concerning work in most students. The extent of favorable competition in the world of work is in part a result of the location of one's relative position throughout his educational career in schools, and the location of the school itself in terms of generalized values which differentiate the various types of education of educational systems from each other. Thus, the rank order of the school is related to how it fares in dealing with routine but necessary organizational problems. The image of vocational-technical education will undoubtedly continue to change in response to other changes in the economic and labor market structures of society.

Some implications of this discussion are as follows: We would expect values toward vocational-technical education to change because of the functional contribution sub-professional technicians are now making to the economy. Our scientific efforts and technological changes are fostering a greater need for skilled technicians who will not be trained in universities and colleges essentially but in specific vocational-technical programs. The need for, the economic rewards associated with, and the occupational structure of technician level occupations should result in a significant increase in the aspirations and motive levels necessary to achieve that level of work experience.

Secondly, the values, the criteria people use to choose work and influence others' choices of work should change in relation to the amount of recent and continuing exposure from political and economic sources on problems of mobilizing those in "poverty" and those who are unemployed or underemployed in American society.

Third, advancing technological problems will require an increasing number of adults to reevaluate their present experiences in terms of the need for retraining. Adult education exposure should result in some reorganization of values for the requirements of both upper blue-collar and for many white-collar occupations. All of the factors noted relate to the function that increased visibility and "product" marketability have for vocational education. This increase in visibility and marketability should be reflected in both quantity and quality of students moving into kinds of work where their formal training is the result of participation in sub-baccalaureate occupational education-training programs.

Finally, unless the choices made by political, economic, and educational leaders result in action that mobilizes the employable out of the ranks of low-income cultural situations (historically, efforts have been rationalized through social welfare programs of various sorts) it is most likely that the gap between the "haves" and "have-nots" in society will grow larger and more distinct. The employment requirements derived from sophisticated organizational and technological developments strictly bypass those without requisite qualifications for entry and participation.

FOOTNOTES

1. Paper presented at the National Seminar on Research in Evaluation of Occupational Education, Raleigh, North Carolina, May 6-10, 1968.

2. Robin M. Williams, *American Society* (New York: Alfred A. Knopf, 1964), p.399. Revised, second edition.

3. Economists, political scientists, psychologists, anthropologists, and sociologists, for example. For economic perspective see Kenneth J. Arrow, *Social Choice and Individual Values* (New York: John Wiley and Sons, 1951); and Sidney Hook (ed.), *Human Values and Economic* Policy (New York: New York University Press, 1967). A review of psychological frames of reference can be found in William F. Dukes, "Psychological Studies of Values," *Psychological Bulletin*, 52 (1955), 24-50; clearly the authoritative statements on values in anthropology appear in Clyde Kluckhohn, "Values and Value Orientation in the Theory of Action," in Talcott Parsons and Edward A. Shills (eds.), *Toward A General Theory of Action* (Cambridge: Harvard University Press, 1951), pp.388-433, and Florence R. Kluckhohn and Fred L. Strodtbeck, *Variations in Value Orientations* (Evanston, Ill.: Row, Peterson, 1961); major sociological treatments appear in Parsons and Shills, "Values, Motives, and Systems of Action," in *Toward A General Theory of Action*; and especially Williams, "Values and Beliefs," Chapter 11, in *American Society*.

4. Compare definitions employed in Harry K. Swarzweller, "Values and Occupational Choice," *Social Forces*, 39 (1960), 126-135; L. I. Pearlin and M. L. Kohn, "Social Class, Occupation, and Parental Values: A Cross-National Study," *American Sociological Review*, 31 (1966), 466-479; J. R. Wood and E. A. Weinstein, "Industrialization, Values, and Occupational Evaluation in Uruguay," *American Journal of Sociology*, 72 (1966) 47-57; the earlier article of Arnold M. Rose, "Sociology and the Study of Values," *British Journal of Sociology*, 7 (1956), 1-17; and J. F. Marsh, Jr. and F. P. Stafford, "Effects of Values on Pecuniary Behavior: The Case of Academicians," *American Sociological Review*, 32 (1967), 740-754.

5. Cf. especially the treatments in William A. Scott, *Values and Organizations* (Chicago: Rand McNally, 1965), pp.1-15; Ralph H. Turner, *The Social Context of Ambition* (San Francisco: Chandler Publishing Co., 1964), pp.66-108; and Phillip E. Jacob, *Changing Values in College* (New York: Harper and Brothers, 1957), pp.1-11.

6. Williams, *American Society*, p.400.

7. Talcott Parsons, *The Social System* (New York: Free Press of Glencoe Paper Back Edition, 1964, orig. 1951), p.12.

8. *Ibid*., p.5.

9. Jacob, *op*. *cit*., p.xiii.

10. Scott, *op. cit.*, p.3.

11. George A. Lundberg, "Human Values: A Research Program," *Proceedings of the Pacific Sociological Society*, 18 (1950), 103.

12. Clyde Kluckhohn, "The Study of Values," in Donald N. Barrett (ed.), *Values in America* (Notre Dame, Indiana: University of Notre Dame Press, 1961), p.18.

13. Parsons, *The Social System*, p.208. Parsons analyzes value-orientation in his classificatory scheme based on value pattern variable combinations including: (1) universalism-particularism orientation, (2) specificity-diffuseness orientation, (3) affectivity-affective neutrality orientation, (4) ascriptive-achievement orientation and (5) self-collectivity orientation. *Ibid.*, pp.101-112. Each orientation allows a classification of ego's act toward alter in terms of these orientations. For example, if ego's relationship toward alter is in terms of immediate gratification rather than long run gratification expectations; highly diffused (parent-child relationship) rather than specific (contractual obligation); in terms of personal identity rather than as a class of objects; or in terms of his performances rather than status; ego's value orientation can be described as affective, diffuse, particularist, and achievement oriented.

14. See the statement in Herman D. Stein and Richard A. Cloward (eds.), *Social Perspectives on Behavior* (Glencoe, Ill.: The Free Press, 1958), "Values determine the choices men make and the end they live by," p.263; quoted in Judith Blake and Kingsly Davis, "Norms, Values, and Sanctions," Chapter 13 in Robert E. L. Faris (ed.), *Handbook of Modern Sociology* (Chicago: Rand McNally & Co., 1964), p.462.

15. Scott, *op. cit.*, p.9.

16. Lundberg, *loc. cit.*

17. Blake and Davis, *op. cit.*, p.460. This critique has considerable force and applies to a wide variety of program evaluation attempts. Most of the so called self-evaluation strategies fail precisely at this point, *i.e.*, they lack empirical control over responses and consequently no "real" standard serves as a base for comparison.

18. *Cf.* Williams, *American Society*, p.401.

19. An especially good operational definition of values which incorporates most of the elements reviewed in these definitions is in Swarzweller, *op. cit.*, p.127. "Values ... must be inferred from behavior--from what people say and/or from what people do. In this respect, values are constructs in the mind of the researcher which explain, or label, the conceptual criteria people use as judgment standards when choosing from alternatives. Patterned regularity of choices is the key notion in an operationally useful definition."

20. Scott, *op. cit.*, p.3.

21. These remarks are consistent with the theory of occupational choice literature. *Cf.* especially Eli Ginzberg, *Occupational Choice: An Approach to a General Theory* (New York: Columbia University Press, 1951); and Donald E. Super, *Vocational Development* (New York: Bureau of Publications, Teachers College, Columbia University, 1957); see also Richard L. Simpson and Ida H. Simpson, "Social Origins, Occupational Advice, Occupational Values, and Work Careers," *Social Forces*, 40 (1962), 274-271.

22. Parsons, *The Social System*, *loc. cit.*, *Cf.* also Parsons and Robert F. Bales, *Family, Socialization and Interaction Process* (Glencoe, Ill.: The Free Press, 1955).

23. Robert K. Merton, *Social Theory and Social Structure* (New York: The Free Press of Glencoe, 1957), p.265. Revised, enlarged edition.

24. Robert K. Merton and Robert A. Nisbet (eds.), *Contemporary Social Problems* (New York: Harcourt, Brace and World, Inc., 1966), pp.179-180. Second Edition.

25. Talcott Parsons, "A Revised Analytical Approach to the Theory of Social Stratification," in Parsons, *Essays in Sociological Theory* (New York: The Free Press of Glencoe, 1964), p.386.

26. *Ibid.*, p.387.

27. Paul K. Hatt, "Occupation and Social Stratification," *American Journal of Sociology*, 55 (1950), 533-543.

28. There is a widely developed literature on stratification. See Kingsly Davis and Wilbert E. Moore, "Some Principles of Stratification," *American Sociological Review*, 10 (1945), 242-249, and their earlier article, "A Conceptual Analysis of Stratification," *American Sociological Review*, 7 (1942), 309-321. These two sources plus the essay by Parsons, see footnote 25, provide the basis of the so called "functional" theory of stratification, based on the contribution a position makes to society in relation to effort required and scarcity of personnel in filling the position. Another formulation of class structure, widely used is by Max Weber. He develops hierarchy positions, "classes" in the economic order, "status groups" which are part of the social order, and "parties" as part of the political order. See Chapter 7 in the translation by Hans H. Gerth and C. Wright Mills, *From Max Weber* (New York: Oxford University Press, 1964). For an excellent statement of another perspective, the value theory of stratification and its use as the basis for integrating much research literature on poverty and mobility, see Harold F. Kaufman, Kenneth P. Wilkinson, and Lucy W. Cole, *Poverty Programs and Social Mobility* (State College, Mississippi: Social Science Research Center, Mississippi State University, Preliminary Report No.13, September, 1966).

29. Summaries cited here include both sociological and psychoanalytic points of departure for assessing class value differentials. See Herbert Hyman, "The Value Systems of Different Classes: A Social Psychological Contribution to the Analysis of Stratification," in Reinhard Bendix and Seymour Martin Lipset (eds.), *Class, Status, and Power: A Reader in Social Stratification* (Glencoe, Ill.: The Free Press, 1953), pp.426-442; Joseph A. Kahl, *The American Class Structure* (New York: Rinehart and Co., 1953); Leonard Reissman, "Levels of Aspiration and Social Class," *American Sociological Review*, 18 (1953), 233-242; Bernard C. Rosen, "Achievement Syndrome: A Psychocultural Dimension of Social Stratification," *American Sociological Review*, 21 (1956), 203-211; and R. F. Larsen and S. S. Sutker, "Value Differences and Value Consensus by Socioeconomic Levels," *Social Forces*, 44 (1966), 563-569.

30. See the discussion of this point in Harry Johnson, *Sociology: A Systematic Introduction* (New York: Harcourt, Brace and Company, 1960), pp.485-493.

31. The classical treatment of what work has meant to men from antiquity to the present is in Adriano Tilgher, *Work: What It Has Meant to Man Through the Ages*, translated from *Homo Faber* by Dorothy Canfield Fisher (New York: Harcourt, Brace and Co., 1930); and more recently, Eugene A. Friedman and Robert J. Havighurst, *The Meaning of Work and Retirement* (Chicago: University Press, 1954). Havighurst and Friedman compare the meaning of work for such types of workers as: steel workers, coal miners, retail salespersons, skilled craftsmen, and physicians.

32. *Cf.* especially C. Wright Mills, *White Collar* (New York: Oxford University Press, 1951), Chapter 10; and Robert Blauner, *Alienation and Freedom* (Chicago: University of Chicago Press, 1964). David Riesman and others, *The Lonely Crowd* (New Haven: Yale University Press, 1961).

33. Robert S. Weiss and David Riesman, "Work and Automation: Problems and Prospect," in Merton and Nisbet, *op. cit.*, pp.559-560. This problem is systematically analyzed in Raymond Firth, *Primitive Polynesian Economy* (London: George Routledge and Sons, Ltd., 1939).

34. Williams, *American Society*, pp.417-421.

35. *Ibid.*, pp.419-421.

36. *Ibid.*, p.422.

37. Max Weber, *The Protestant Ethic and the Spirit of Capitalism*, translated by Talcott Parsons (New York: Charles Scribner's Sons, 1958). First translation, 1930.

38. This view as still extant has been challenged by William H. Whyte, Jr. See his, *The Organization Man* (Garden City, New York: Doubleday and Company, n.d.), pp.3-66. First published by Simon and Schuster, Inc., 1956. Whyte suggests that a new social ethic is emerging which glorifies adjust-

ment and conformity to demands placed on individuals by large organizational structures which dominate the social landscape, hence, the nomenclature "organization man." His own viewpoint is at odds with this development.

39. Robert Lynd and Helen Lynd trace the shift in social organization in "Middletown" from 1890 to 1924 with reference to the breakdown of the craft hierarchy brought about by industrialization. Earlier craft workers were as highly respected, politically influential, and as well paid as their counterparts in business. By end of first quarter of this century the craft workers' status had been rearranged and was subordinate in the class structure. For the consequences of this see Robert S. Lynd and Helen M. Lynd, *Middletown* (New York: Harcourt, Brace and Co., 1929).

40. Williams, *American Society*, p.424. The devaluation of work can be inferred from the model of "craftsmanship" espoused by Mills; *op. cit.*, p.220. "Craftsmanship as a fully idealized model of work gratification involves six major features: There is no ulterior motive in work other than the product being made and the processes of its creation. The details of daily work are meaningful because they are not detached in the worker's mind from the product of the work. The worker is free to control his own working action. The craftsman is thus able to learn from his work; and to use and develop his capacities and skills in its prosecution. There is no split of work and play, or work and culture. The craftsman's way of livelihood determines and infuses his entire mode of living." Work is devalued according to Mills when any or all of these are negated by contemporary forms of social organization.

41. Williams, *American Society*, pp.455-456.

42. The first systematic treatment of these data appear in Du-Mei Young, *The Occupational Aspirations of Rural and Urban Negro Household Heads* (unpublished Masters thesis, Mississippi State University, 1968).

43. *Cf.* Lee Taylor and Charles W. Glasgow, *Occupations and Low-Income Rural People* (Baton Rouge, La.: Southern Cooperative Series Bulletin 90, 1963); and John E. Dunkelberger, *Intensity of Job Mobility Aspirations Among Household Heads in Low-Income Areas of the Rural South* (unpublished Ph.D. dissertation, Mississippi State University, 1965).

44. See, for example, Archie O. Haller and William H. Sewell, "Farm Residents and Levels of Educational and Occupational Aspiration," *American Journal of Sociology*, 62 (1957), 407-411; Russell Middleton and Charles M. Grigg, "Rural-Urban Differences in Aspiration," *Rural Sociology*, 24 (1959), 347-354; Lee G. Burchinal, "Differences in Educational and Occupational Aspirations of Farm, Small-Town, and City Boys," *Rural Sociology*, 26 (1961), 107-121.

45. See Lee Taylor, *Urban-Rural Problems* (Belmont, Calif.: Dickenson Publishing Co., 1968), pp.26-34.

46. However, the differences are only relative rather than absolute. See LaMar Empey, "Social Class and Occupational Aspiration," *American Sociological Review*, 21 (1956), 702-709; Simpson and Simpson, *op. cit.*,; Riesman, *op. cit.*

47. Illustrative materials are in Jerry L. L. Miller, "Occupational Choice and the Educational System," *The Journal of Educational Sociology*, 34 (1960), 117-126; James Davis, *Great Aspirations* (Chicago: Aldine Publishing Co., 1964); and Davis, *Undergraduate Career Decisions* (Chicago: Aldine Publishing Co., 1965.

48. See Russell R. Dynes, *et al.*, "Levels of Occupational Aspiration: Some Aspects of Family Experience as a Variable," *American Sociological Review*, 21 (1956), 212-215; and William G. Dyer, "Parental Influence on the Job Attitudes of Children from Two Occupational Strata," *Sociology and Social Research*, 42 (1958), 203-206.

49. Richard F. Hamilton, "Income, Class, and Reference Groups," *American Sociological Review*, 29 (1964), 576-579. Also see his article "The Behavior and Values of Skilled Workers," in William Gomberg and Arthur Shostak (eds.), *Blue Collar World* (Englewood Cliffs, New Jersey: Prentice Hall, 1964), pp.42-52.

50. Morris Rosenberg, *et al.*, *Occupations and Values* (Glencoe, Ill.: The Free Press, 1957).

51. See, for example, G. S. Counts, "The Social Status of Occupations," *School Review*, 33 (1925); H. D. Anderson, "Occupational Attitudes of a Group of College Men," *Social Forces*, 4 (1927); H. C. Lehman and P. A. Witty, "Further Study of the Social Status of Occupations," *Journal of Educational Psychology*, 5 (1931); Mapheus Smith, "An Empirical Scale of the Prestige Status of Occupations," *American Journal of Sociology*, 8 (1943); M. E. Deeg and D. G. Patterson, "Changes in the Social Status of Occupations," *Occupations*, 25 (1945); "Jobs and Occupations: A Popular Evaluation," *Opinion News*, 9 (1947).

52. Robert W. Hodge, Paul M. Siegel, and Peter H. Rossi, "Occupational Prestige in the United States, 1925-1963," *American Journal of Sociology*, 70 (1964), 286-302.

53. Alex Inkeles and Peter H. Rossi, "National Comparisons of Occupational Prestige," *American Journal of Sociology*, 61 (1956), 329-339.

54. "Jobs and Occupations," *op. cit.*

55. Albert J. Reiss, Jr., *Occupations and Social Status* (New York: The Free Press of Glencoe, Inc., 1961). See also, Paul K. Hatt, "Occupations and Social Stratification," *op. cit.*

56. Hodge, Sigel and Rossi, *op. cit.*

57. Robin M. Williams, Jr., "Values and Modern Education in the United States," in Donald N. Barrett (ed.), *Values in America* (Notre Dame, Indiana: University of Notre Dame Press, 1961), pp.57-88.

58. Wilbur B. Brookover, *A Sociology of Education* (New York: American Book Co., 1955), p.318.

59. August B. Hollingshead, *Elmtown's Youth: The Impact of Social Class Upon Adolescents* (New York: Science Editions, 1961). Originally published by Wiley, 1949.

60. *Ibid*., p.125.

61. Robert J. Havighurst and Hilda Taba, *Adolescent Character and Personality* (New York: John Wiley and Sons, 1949). See pp.27-46 for a more detailed treatment.

62. Williams, "Values and Modern Education," p.70.

63. Aaron V. Cicourel and John I. Kituse, *The Education Decision Makers* (Indianapolis, Ind.: Bobbs-Merrill, 1963).

64. Williams, "Values and Modern Education," p.21.

65. Davis, *Undergraduate Career Decisions*, p.*v*.

66. Some major exceptions are Burton R. Clark in his study of adult education programs in California, "Organizational Adaptation and Precarious Values," *American Sociological Review*, 21 (1956), 327-336; Ralph C. Werrick and Robert J. Crowley, *Vocational Education as Perceived by Different Segments of the Population* (Ann Arbor: Cooperative Research Project No.1577, University of Michigan and Office of Education, H.E.W., 1964); and current research of the author on the relationship between prestige and effectiveness in educational organizations: Arthur R. Jones, Jr. and D. Wood Harper, Jr., "Relationships Between Levels of Prestige and Effectiveness in Educational Organizations," (Paper presented at the annual meeting of the Southwestern Social Science Association, Dallas, April 1968).

67. *Cf*. Charles Perrow, "Organizational Prestige: Some Functions and Dysfunctions," *American Journal of Sociology*, 66 (1961), 335-341.

APPENDICES

APPENDIX A

Distribution of Employed Civilian Workers, by Occupational Groups and Selected Occupations, United States,[a] 1950.

Occupation Groups and Selected Occupations	1960 %	1950 %	Percent Change
Persons with occupations reported	100.0	100.0	
White-collar workers	43.3	37.4	27.7
Professional, technical & kindred workers	11.8	8.8	47.0
Engineers, technical[d]	1.4	.9	64.3
Chemical	.1	.1	26.1
Civil	.3	.2	24.0
Electrical	.3	.2	73.7
Industrial	.2	.1	142.0
Mechanical	.3	.2	40.7
Sales	.1	(b)	129.8
Natural scientists	.2	.2	27.7
Biological scientists	(b)	(b)	51.2
Chemists	.1	.1	11.8
Mathematicians	(b)	(b)	345.1
Physicists	(b)	(b)	87.8
Medical and other health workers	2.1	1.8	29.6
Dentists	.1	.1	10.2
Dietitians & nutritionists	(b)	(b)	16.2
Nurses, student professional & professional	1.0	.9	34.2
Physicians & surgeons	.4	.3	18.9
Technicians, medical and dental	.2	.1	80.2
Teachers, elementary & secondary schools	2.5	1.8	45.9
Other professional, technical & kindred workers	5.5	4.0	52.3
Accountants & auditors	.8	.7	24.7
Lawyers & judges	.3	.3	16.9
Technicians, electrical & electronic	.1	(b)	679.2
Technicians, other engineering & physical science	.3	.2	101.8
Managers, officials, & proprietors except farm	8.8	9.0	-7.4
Salaried	5.5	4.5	35.0
Self-employed	3.3	4.5	-20.0
Clerical & kindred workers	15.1	12.5	33.8
Secretaries, stenographers & typists[c]	3.5	2.7	44.5
Other clerical workers	11.6	9.8	30.9
Cashiers	.8	.4	102.7
Office-machine operators	.5	.3	116.2

APPENDIX A (Continued)

Occupation Groups and Selected Occupations	1960 %	1950 %	Percent Change
Sales workers	7.5	7.0	18.7
Retail trade	4.4	4.4	10.0
Other than retail trade	3.2	2.6	33.4
Insurance agents, brokers & underwriters	.6	.5	33.7
Real estate agents & brokers	.3	.3	37.0
Salesmen & sales clerks, manufacturing	.8	.6	41.7
Manual workers	38.6	40.3	5.8
Craftsmen, foremen, & kindred workers	14.2	14.0	11.8
Foremen (not elsewhere classified)[d]	1.8	1.4	41.1
Construction craftsmen[d]	3.9	4.2	2.1
Brickmasons, stonemasons, & setters	.3	.3	12.0
Carpenters	1.3	1.6	-10.9
Electricians	.5	.6	8.3
Mechanics & repairmen[d]	3.6	3.1	28.6
Air-conditioning, heating & refrigeration equipment	.1	.1	42.1
Automobiles	1.1	1.2	4.2
Office machines	(b)	.1	-5.7
Metal craftsmen, except mechanics[d]	1.8	2.0	.4
Boilermakers	(b)	.1	-33.4
Machinists	.8	.9	-3.1
Molders	.1	.1	-19.4
Toolmakers, diemakers & setters	.3	.3	19.4
Other craftsmen	3.2	3.4	3.1
Locomotive engineers	.1	.1	-22.4
Locomotive firemen	.1	.1	-31.7
Operatives & kindred workers	19.4	20.1	6.4
Drivers & deliverymen	3.7	3.4	19.6
Other operatives, etc.	15.7	16.7	3.7
Laborers except farm & mine	5.1	6.2	-9.6
Service workers, including private household	11.7	10.2	25.6
Service workers, except private household	8.9	7.7	26.7
Protective service workers[d]	1.1	1.0	17.3
Waiters, bartenders, cooks, and counter workers	2.8	2.4	29.3
Other service workers	5.0	4.3	27.5

APPENDIX A (Continued)

Occupation Groups and Selected Occupations	1960 %	1950 %	Percent Change
Private household workers	2.8	2.4	29.3
Agricultural workers	6.4	12.1	-41.3
Farmers & farm managers	4.1	7.7	-41.9
Farm laborers & farm foremen	2.4	4.3	-40.2

[a] Adjusted to include Alaska and Hawaii.
[b] Less than 0.05 percent.
[c] Female only; the comparatively few men recorded in this group are included in the total for the major occupational group.
[d] Male only; the few women recorded in this group are included in the total for the major occupational group.

NOTE: Because of rounding, sums of individual items may not equal totals. Most totals include occupations not shown separately.

SOURCE: Max Rutzick and Sol Swerdloff, "The Occupational Structure of U.S. Employment, 1940-1960," Monthly Labor Review, 85 (November 1962), p.1211.

APPENDIX B

Distribution of NORC Prestige Ratings, United States, 1947 and 1963

Occupation	1947 %	1963 %
U. S. Supreme Court Justice	1	1
Physician	2.5	2
Nuclear physicist	18	3.5
Scientist	8	3.5
Government scientist	10.5	5.5
State Governor	2.5	5.5
Cabinet member in the federal government	4.5	8
College professor	8	8
U. S. Representative in Congress	8	8
Chemist	18	11
Lawyer	18	11
Diplomat in the U. S. Foreign Service	4.5	11
Dentist	18	14
Architect	18	14
County judge	13	14
Psychologist	22	17.5
Minister	13	17.5
Member of the Board of Directors of a large corporation	18	17.5
Mayor of a large city	6	17.5
Priest	18	21.5
Head of a department in a state government	13	21.5
Civil engineer	23	21.5
Airline pilot	24.5	21.5
Banker	10.5	24.5
Biologist	29	24.5
Sociologist	26.5	26
Instructor in public schools	34	27.5
Captain in the regular army	31.5	27.5
Accountant for a large business	29	29.5
Public school teacher	36	29.5
Owner of a factory that employs about 100 people	26.5	31.5
Building contractor	34	31.5
Artist who paints pictures that are exhibited in galleries	24.5	34.5
Musician in a symphony orchestra	29	34.5
Author of novels	31.5	34.5
Economist	34	34.5
Official of an international labor union	40.5	37
Railroad engineer	37.5	39

Appendix B (Continued)

Occupation	1947 %	1963 %
County agricultural agent	37.5	39
Owner-operator of a printing shop	42.5	41.5
Trained machinist	45	41.5
Farm owner & operator	39	44
Undertaker	47	44
Welfare worker for a city government	45	44
Newspaper columnist	42.5	46
Policeman	55	47
Reporter on a daily newspaper	48	48
Radio announcer	40.5	49.5
Bookkeeper	51.5	49.5
Tenant farmer	51.5	51.5
Insurance agent	51.5	51.5
Carpenter	58	53
Manager of a small store in a city	49	54.5
A local official of a labor union	62	54.5
Mail carrier	57	57
Railroad conductor	55	57
Traveling salesman for a wholesale concern	51.5	57
Plumber	59.5	59
Automobile repairman	59.5	60
Playground director	55	62.5
Barber	66	62.5
Machine operator in a factory	64.5	62.5
Owner-operator of a lunch stand	62	62.5
Corporal in the regular army	64.5	65.5
Garage mechanic	62	65.5
Truck driver	71	67
Fisherman who owns his own boat	68	68
Clerk in a store	68	70
Milk route man	71	70
Streetcar motorman	68	70
Lumberjack	73	72.5
Restaurant cook	71	72.5
Singer in a nightclub	74.5	74
Filling station attendant	74.5	75
Dockworker	81.5	77.5
Railroad section hand	79.5	77.5
Night watchman	81.5	77.5
Coal miner	77.5	77.5
Restaurant waiter	79.5	80.5
Taxi driver	77.5	80.5

Appendix B (Continued

Occupation	1947 %	1963 %
Farm hand	76	83
Janitor	85.5	83
Bartender	85.5	83
Clothes presser in a laundry	83	85
Soda fountain clerk	84	86
Sharecropper	87	87
Garbage collector	88	88
Street sweeper	89	89
Shoe shiner	90	90

SOURCE: Robert W. Hodge, Paul M. Siegel, and Peter H. Rossi, "Occupational Prestige in the United States, 1925-1963," American Journal of Sociology, LXX (November 1964), 290-292.

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MEASUREMENT AND APPRAISAL OF COMPETENCIES

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MEASUREMENT AND APPRAISAL OF COMPETENCIES

I am grateful for the opportunity to present this position paper at The National Seminar on Research in Occupational Education at the North Carolina State University and to express some ideas about evaluation and particularly about the measurement and appraisal of competencies in occupational education. Because it seems to me that the measurement and appraisal of competencies is basic to the planning of our entire educational program and to the progress of the industrial and social growth of our Nation, my first reaction upon receiving the invitation to present a position paper was to prepare a detailed analysis and interpretation of what might and should be done in this area of occupational education research. This would have included information basic to all research and the statistical treatment of data rather than a consideration of competencies that should be striven for on various educational levels and in preparation for success in employment. Because information on research techniques is readily available and those engaged in research are well informed my second thought was to point up some of my reactions to experimentation in the area of measurement and appraisal of competencies rather than to discuss techniques or methodology.

Introduction

It is the purpose of our educational system to provide the most efficient and effective educational program that can possibly be provided for all people in terms of their abilities, needs, aptitudes, and aspirations. The Vocational Education Act states this purpose with specific reference to the improvement and expansion of the vocational education program. It is, therefore, the duty of those engaged in education and particularly in occupational education, to assist in the careful guidance of each individual toward an area of education and employment in which success can be achieved, and which will provide the means and satisfactions necessary to the American way of life. The careful selection and guidance of individuals for and toward occupational careers, and training for these careers, is not only a safeguard to these individuals in terms of their own time and satisfaction, but provides for the efficiency of the occupational education program in relation to instruction, the development of meaningful curriculum design, the adjustment of the methodology of instruction, effective and efficient administrative planning, and the economic, social, industrial, and technological progress of our Nation.

The Broadening Concept of Vocational Education

If we are to accept the hypothesis that almost without exception everyone can be trained, that everyone needs to be trained, and that everyone can be guided, counseled, and motivated toward occupational training and job placement, we must know what each individual can be trained for and what the capacities and the needs of each individual are. With this knowledge, guidance toward specific educational goals becomes meaningful and realistic.

Investigation relative to job requirements indicates that occupational training in single trades can no longer be a separate kind of educational offering isolated from other areas of instruction, but must be considered as a part of a whole in which instruction in efficient industrial practice and realistic job training is an integral part of all occupational education. The apparent ineffectiveness of education in many instances has been blamed on the division of disciplines into separate categories. The educational process, in order to meet the needs of our modern technological society, must be based on the inter-relationship of one discipline to another and the relationship of various types of subject matter to each other rather than on a series of separate subject areas.

Vocational education, as such, has been thought of as training for a specific saleable skill. Highly specialized areas of each trade are changing so rapidly, however, that in addition to specific skills necessary to perform the existing job requirements of a trade, backgrounds must be broad enough to provide for the flexibility of the worker to adjust to ever changing job requirements. Traditional definitions and requirements of vocational education must be changed or modified to allow for sociological and technical change. Unfortunately our educational programs continue to concentrate on the development of particular trade skills rather than on the development of a combination of skills and characteristics that contribute to productive employment. During interviews with employers in the preparation of evaluation and appraisal materials for the Norwalk (Connecticut) Study employer after employer gave workers poor ratings because of their personal inadequacies rather than because of their inability to perform the work for which they were hired. The job requirements for each of the general occupational areas used in the preparation of materials for the Norwalk Study were broad and could be applied to one or more possible job opportunities in the majority of places of employment visited.

Vocational programs typically offered have served only a limited segment of our population and have offered preparation for only a small number of trades. These programs have often been narrow and appropriate to the aspirations and abilities of only a limited number of people. Modern technology, communication, and transportation are changing the scope and requirements of specific jobs with trade areas, and, therefore, vocational training, so that it can no longer be looked upon as "vocational" in the old sense but rather "occupational" training. It can no longer be looked upon only in terms of local needs, limits, and boundaries, but must be looked upon in terms of national and world wide occupational opportunities and needs as well. The measurement and appraisal of competencies must be conducted with constant reference to the broadened objectives of occupational education and training rather than to limited and narrow programs of trade training.

The Measurement and Appraisal of the Individual

Research indicates that no one characteristic or single group of characteristics is a determining factor in the success of the training of the individual. Success of the individual in employment presents a dual challenge for the researcher. The success of the worker in the eyes of the employer is based on the ability of the worker to produce or perform within the organizational framework of the place of employment. From the standpoint of the worker, however, success appears to depend on the overall satisfaction enjoyed as a result of employment in a specific type of work.

If we are to train the individual to be "capable, suitable, or sufficient for the purpose, and adequately and properly qualified" for success in occupational work, it seems to me that we must begin with the measurement and appraisal of competencies as early as possible in the life of that individual. It is necessary, then, that such appraisal begin on the elementary level and that we watch the progress of the individual in terms of abilities, aptitudes, changes of interest, likes and dislikes, attitudes toward work, and use of time. As the individual progresses measurements should be made at regular intervals so that changes and growth can be recorded systematically. A complete and progressive record should be used in the analysis of the individual's needs and abilities. To be functional, measurement should be used for the purpose of guidance toward training that will prepare individuals to meet and adjust to varied job requirements and situations in occupational areas which are within the range of their abilities. If the growing employment needs of industry are to be met by occupational education it is also essential that the training and selection of workers for employment be based on the extent to which each individual can be trained for productive work in a specific trade or occupational area of work. A further consideration should be the extent to which the individual can socially, emotionally, and physically adjust to the present and ever changing requirements of a specific type of work, locally, nationally or wherever employment may exist. These considerations cannot be made without objective evidence and a cumulative record of social, emotional, mental, and physical changes.

Although the need for skilled workers in the traditional trades still exists, the nature of skills required to perform a particular job has, in many instances, changed from the performance of a tool process to the insertion of a tape and the pushing of a button or the pulling of a lever. Our changing technology has brought about new and sophisticated jobs, and demands that the individual be trained in diversified competencies which will make the transfer of job skills from one occupation to another possible. Changes in job requirements are an ever increasing threat to the employment needs of industry and to the security of the worker.

Because of the growth of automation, a number of less demanding jobs have disappeared or are disappearing in production processes. Jobs in less demanding occupations available to those with limited ability would now seem to fall in the service occupations group where the demand seems to be increasing. Once again, a general type of training and preparation seems to be necessary rather than training which approaches the actual development of skills. It is necessary for the researcher in occupational education to discover those competencies needed to satisfactorily perform the duties of workers in the various trade and occupational areas through research in these occupational areas. Through realistic analysis of needed competencies on the one hand, and an appraisal of competencies of potential workers on the other, the basis for effective and efficient training programs can be established. This type of information should be fundamental to the determination of course content, course length, methods of instruction, the selection of equipment, and the nature of the facilities to be used. Just as this information can be used in the determination of program design, a reverse procedure in research design can be applied to the same type of data gathered during or at the end of training, or both, for the purpose of program evaluation.

Measurement and Appraisal Instruments

If measurement and appraisal of individual competencies is to be meaningful, it must be accomplished with the individual learner as the prime consideration, rather than the course of study, the curriculum, the plant, the school, or the administration. Too often we set out to evaluate the effectiveness of instruction in the blacksmith shop where there are no horses to be shod. Instruments for measurement and appraisal in occupational training and employment must be developed for use with all ages, and for all levels of physical and mental development. Reference is made here to forms to be used by the occupational educator rather than the clinical psychologist. Existing forms are often formidable and complicated. These forms cause testing or appraisal to be a harrowing experience particularly to those with reading difficulties, language barriers, or to those who have not been recently exposed to evaluative instruments. Experience with various standardized aptitude tests administered to high school students during research experiments and in regular testing programs has revealed extreme difficulty on the part of these students in following complicated directions and in reading the instructions as well as in reading the questions. The development and standardization of simple specialized instruments to be used at regular intervals for the purpose of developing competency profiles seems to be badly needed. Data obtained in research as a result of using tests that cannot be understood by those being measured is useless data although it has been used on many occasions in impressive tables and voluminous reports.

To be effective, the development of sophisticated research relative to the appraisal of competencies must be based on the abilities, aptitudes, interests, and needs of the individual, not at the present time alone but on the potential of the individual to grow to the full extent of his capabilities. The development of occupational skills, desirable attitudes, social growth, and the ability of the individual to adjust to varied conditions of employment are constantly changing factors. As such, they call for continued measurement and appraisal throughout school life, training, and employment. Once again the use of forms and tools of measurement which would provide a progressive scale, or profile representing the individual's place in relation to the satisfaction of specific job needs or even broader occupational needs would seem highly desirable.

If the process of evaluation is to be meaningful in terms of the goals of education, and specifically occupational education, its purpose cannot be that of screening, that is "screening out," but rather the discovery of abilities, aptitudes, and interests which may be developed in an individual to equip him for a kind of work in which he can be successful and which will enable him to be a well adjusted, contributing, and productive member of society. Thus, the development of instruments for evaluation, or the selection of existing measurement tools for the evaluation of competencies implies the existence of a program of guidance. The program must be such that the findings of research can be applied to the placement of the individual in a program of occupational training that will be efficient and effective in terms of the individual, in terms of the administration, instruction, methodology and economics of the training program and in terms of the needs of industry. It becomes apparent that curriculum evaluation and development cannot be separated from the appraisal and evaluation of individual competencies and that neither can be accomplished without an analysis of job requirements and the development of criterion measures based on these requirements.

Predictive Testing

The effectiveness of a program of occupational education may be said to be in direct relationship to the care with which students are selected for the program. If this hypothesis is true, then the development or selection of tools for selection of students for training, based on correlation with success at the end of a training program and in actual occupational employment is necessary. The problem of evaluating competencies then poses the problem of determining those characteristics which an individual should and must possess to be considered employable, or to go a step further, to be successful as an employee on a specific job level in a given trade or occupation. It is therefore the function and perhaps the obligation of researchers in occupational education to develop criterion measures for each of the various occupations, trade areas, or occupational clusters. The purpose of these criteria would be their use as a basis for the placement of individuals in occupational training programs for specific trades or occupational areas, and in employment best suited to their abilities and interests.

The evaluation and assessment of competencies as a phase of the pupil selection process for programs of occupational education has been used in schools and school systems throughout the country for the purposes of screening, prediction, and guidance. Although the collection and analysis of data relative to achievement on standardized forms has been used in screening, prediction, and guidance there seems to be little evidence of the use of these data in correlation with objective criterion measures for success in occupational training or in specific areas of trade training. In the Norwalk Study however criterion measures were developed to determine weaknesses, strengths and growth of the individual, at the beginning of the training, during training, and at the end of training and during employment. These measures were of the questionnaire-rating scale variety and provided a profile sheet on which several profiles could be drawn for comparison. Criteria were established as a result of a study of employers' ratings of employees in several different occupational areas. These areas included various job titles which were grouped as clerical, mechanical and agricultural, and medical and food services. In the Connecticut Vocational Study on predictive testing, performance tests were developed as criterion measures by panels of experts in trade, electricity and machine shop. These instruments were developed in two parts. The actual performance part was developed to provide controlled conditions and equipment set-ups. The theory part of the instrument was of the written objective achievement test form.

Up to the present time, there seems to have been only limited investigation concerning the predictive value of standardized measurement instruments in occupational training or in specific occupational areas, and little research done relative to the development of tests specifically designed as predictive measures for use in the guidance of students toward, or away from, specific areas of occupational instruction.

It must be emphasized that a major concern in the selection or development of predictive testing instruments for use in occupational education is that of providing data which may be used in the guidance of the student toward an occupational career in which success may be achieved and failure prevented through the discovery of potential for competency in a specific occupation or occupational area.

Although various procedures for screening and selection for occupational training have been used throughout the country, at the present time there seems to be no specific achievement or aptitude test, occupational inventory, check list, measuring device, or combination of these which is completely satisfactory as a predictive instrument. The results of limited research in occupational education relative to screening and predictive testing seem to indicate, however, that certain knowledges, skills, aptitudes, and personality traits are necessary for success in a majority of occupations, and that ability in certain areas of knowledge and certain aptitudes, are essential for success in specific occupational areas.

Techniques of objective selection applicable to occupational training, therefore, should and must be used as a part of our educational program. If satisfactory instruments and criteria do not exist it becomes obligatory for occupational educators to develop these instruments through research. It is hoped that through the use of objective measurement and appraisal, individual failure in training programs, the number of high school dropouts, and losses to our nation's labor force will be reduced.

The purpose of testing in occupational education, then, is that of providing one of the types of information that may be used with other data in either predicting success of the individual in a particular area of training, or in the guidance of the individual toward an occupation or vocation. Test scores should be used only as a supplement to the structured interview, the interest inventory, work appraisal profile, anecdotal records, medical records, and school marks. Discovery of the abilities, weaknesses, and potential of the individual through aptitude testing provides information which is valuable and necessary to the satisfactory placement of the individual in a program of occupational training. The aptitude test, however, is not a panacea. Used alone it may be misleading, and may provide data, which will, through its use or misuse, be harmful to the individual, detrimental to the overall success of the instructional program, and costly to the employer. Tests may be too verbal for the poor reader, too advanced in design and content for those with limited backgrounds, too confusing to those who lack academic interest and drive, and often are interpreted in terms of differing backgrounds and experiences. It cannot be denied by those engaged in the measurement and appraisal of competencies that psychometrics are an invaluable aid in the analysis and interpretation of the needs of a given population, or of an individual, and in turn in the development and adjustment of programs, the provision of facilities, the assignment of personnel, and most important, the educational and occupational guidance of the individual. Psychological tests, however, should not be used as sole determinants to decision-making in occupational education either in the guidance and placement of the individual in education or employment, or in program building or development. Just as the stethoscope, the X-ray, and the electro-cardiograph are used by the physician, the psychological or standardized test or measuring instrument should be used by the educator as one of several indicators of symptoms in an overall pattern.

The use of testing in occupational education to be meaningful and profitable must be the result of a real and defined need or purpose, objective analysis of the characteristics of the population to be tested, objective consideration of the instruments to be used, and careful planning in terms of factors of test administration which may in some way effect the objectivity of the test results.

In the development of research design where testing is to be used, or in planning an experimental program of testing, test results obtained should be meaningful and purposeful. They should be used to indicate possible success of the individual in terms of job performance or job requirements, in school, training, or during employment. They may be used to establish norms or in comparative studies to compare groups but they must be used in relation to a specific purpose. It is simple to conclude that intelligence quotients are likely to correlate with successful performance in almost any occupational or vocational area. However, research has indicated that this is not always the case. Similarly, it is simple to conclude that a given test will test what its name purports it will test. This, too, is not always the case.

If tests are to be used we must ask ourselves what the reason for testing is. It is obvious that the administration of any test will result in a series of test scores and that some will be high and some will be low. These scores, however, have little meaning in placing an individual unless they are used in relation to a specific desired ability or a specific standard or requirement.

If tests are to be used, we must ask ourselves what specific characteristics we are looking for and then through careful analysis and interpretation of reports and standardization procedures, use those test forms which seem to be most valid and reliable in the discovery of those specific characteristics. We must constantly be alert to the fact that the name of a test does not necessarily indicate its value in the discovery of an ability, skill, or aptitude.

If tests are to be used we must be well aware of the cultural and educational characteristics of the individual, or individuals to be tested and select or develop instruments that will be on the reading level or comprehension level of those individuals. If testing is to be beneficial in measurement and evaluation, the importance and necessity of practical research before deciding on which tests to use and how these tests are to be interpreted cannot be overestimated. Although uniformity is desired reading and interest levels vary and the evaluative instruments must be designed in terms of the individuals for whom the instruments are to be used; in other words, those whose competencies are to be appraised or evaluated. Particular consideration must be made to prevent discrimination by carefully selecting, and avoiding tests which are slanted toward middle or select income groups. The form of a test may be discriminatory to some with limited backgrounds and language barriers but not necessarily with limited ability to successfully perform a production task or process. Tests can be developed for research purposes which can be administered both to the reader and to the non-reader, to the culturally advantaged and to the culturally disadvantaged, and to those who speak English, and to those with language difficulty. There is however no standard pattern of individual ability or of industrial needs which will permit the use of the exact same test forms in all situations and for all individuals in all geographic areas. Although some tests may be useable in the measurement of individual abilities in most situations and in most geographic areas, there is little evidence that any test package can be recommended as valid in all situations because of the differences in educational requirements, procedures, and offerings, geographic areas, and cultural backgrounds.

If tests are to be used we must consider the administrative problems involved in both individual and group testing. We must be constantly aware of the limitations of the majority of educators in the practice of clinical psychology. If psychological appraisal of an individual is indicated we must make provisions for appraisal by a clinical psychologist. Psychological appraisal should not be attempted by unqualified persons. The administration of tests to individuals or groups presents problems of time, space, programming, and administration. Practical experience in the use of standardized forms in experimental predictive testing and screening has revealed a lack of efficiency in their administration and a lack of interest and training on the part of administrators and proctors. Experience has indicated that in order to counteract the effects of negative attitudes and lack of training on the part of administrators and proctors, special orientation materials must be developed for use in experiments or research involving large samples. These materials include staff orientation materials in addition to information covered during orientation meetings, materials to be read to students prior to testing, specific and detailed explanations of testing procedures in addition to those provided in standardized test packets, and actual step by step instructions to be followed by administrators and proctors during the testing period. In order to preserve the objectivity of group testing it is highly desirable to provide trained proctors to administer tests. Where the size of the sample is too large for this, close supervision by the research staff is needed. Test results are meaningless unless the conditions of administration are conducive to the preservation of their objectivity. Administering unsuitable tests, inefficient administration of tests, improper use of test results, or testing in situations where objectivity is lost defeat efforts toward measurement and appraisal.

The development of new and simple data gathering devices having high validity and reliability may stimulate the measurement and appraisal of competencies and may result in the development of highly sophisticated research which might be extremely difficult with existing instruments.

It is not the purpose of this paper to present fully information relative to the development and use of data gathering instruments, but rather to describe briefly their possible use and misuse and to make a plea for the scientific and objective use of existing instruments in occupational education research, and for the development of new or improved research instruments where the need is indicated.

There has been limited use of the structured interview in research relative to the measurement and appraisal of competencies in occupational education research. This instrument has particular value in the appraisal of attitudes and interests and has been used in several recent studies of educational programs such as the Baltimore Vocational Study and the Yonkers Study to determine the advisability of making changes in policy which would affect the occupational training program of that city. Its use in research demands that it be as carefully designed and constructed as the standardized test. In its construction extreme care should be given to content in terms of the objectives of the study and the data needed. As in the use of tests the objectivity of the structured interview can be lost as a result of careless and unprofessional administration. This seems to be the most serious limitation in the conduct of research in the area of occupational education. Questions to be used and actual interview procedures must be clear and definite so that objectivity is maintained if several interviewers become engaged in the data gathering process. Data obtained as a result of using the structured interview should be tabulated on special check lists developed specifically for this purpose. Because of the nature of some research studies, and the use to which the data is to be put, it is advisable to improve the objectivity of this instrument by using more than one interview, and interviewer in the administration of the questions for the purpose of comparing and analyzing different sets of responses.

The use of the interest inventory in the appraisal of interests seemed to have little value in the Connecticut Study on Predictive Testing. Its limited value in this study and other research in the appraisal of competencies is caused by the short duration of its validity in reflecting interests. The value of the interest inventory then seems to lie in its use as the basis for the interview rather than as an independent research instrument in some studies. Research experience indicates that it may be used however in the collection of data relative to the interests of individuals or individual groups according to age levels, geographic areas, school classes, or other groups having homogeneity. Therefore, careful consideration should be given to the use of the interest inventory as a research tool.

School marks as a determinant or variable in research presents serious problems because of their general subjectivity and the absence of standardized procedures in marking. Many researchers have used averaged subject marks in the analysis of competency studies. Although this is being done at the present time in the second phase of the Connecticut Study to determine proficiency in various subject areas, it can result in a compounding of subjective judgments and the tabulation of spurious data.

Although school marks have been used as variables in occupational research involving the study of competencies, there seems to be limited evidence of the use of shop records or objective measurement or observation of actual shop performance. The individual work appraisal profile developed as a result of objective observation and measurement has been used in local educational programs, and in professional and non-professional employment for the purpose of appraising competencies. Growth, and the rating of attitudes, skills, and performance has been successfully accomplished through the development and use of instruments of this type. Such a device, suggested by committees of vocational educators in New York State, is now being constructed for use in the New York State predictive testing study. The development of carefully planned and designed work appraisal profiles and performance check lists would contribute to the measurement and appraisal of competencies in exploratory courses, training programs, and employment. The work appraisal profile and the objective observation check list is invaluable in the appraisal of the ability of the individual to work with small objects rather than large, to work in a standing position rather than a sitting position, and to work on repetitive rather than individual processes.

Competencies depend on all of those factors which influence the ability to successfully perform work to be accomplished. The questionnaire has been used extensively to investigate factors which may have bearing on competencies in a majority of studies. It is probably the most widely used instrument and as such has been the most abused. As an instrument for use in gathering data otherwise unobtainable it can be most effective and its value indisputable. It has particular value or application in survey studies where opinions and attitudes are being sought. In the recent Baltimore Vocational Study, questionnaires were used in connection with interviews to discover those factors which might have influence on pupil attitudes relating to trade subjects and course offerings. In the Yonkers (New York) Vocational Study three questionnaires were used for this purpose. Questionnaires were prepared for parents, pupils, and former pupils in this study. Although the use of these instruments provided valuable information their value might have been appreciably increased through more efficient administration. As with other data gathering instruments, the value of the questionnaire can be totally nullified by poor planning, extreme complexity, excess wording, and superfluous questions. It can be abused by those who would use it to the exclusion of other means of gathering data and by those who, because of lack of understanding of research practice, would be careless in its administration.

Examination of the characteristics of the various research tools used in collecting data would suggest then that specific instruments be developed for measurement and appraisal of competencies where appropriate instruments do not seem to exist. In special instances, it is necessary to construct data gathering instruments for use in a specific experiment in a specific area, or for a specific need. It is also suggested that there be special training for those engaged in occupational research so that respect for the methodology of research may be developed and an understanding of research practices may be employed in research projects. Too often we have been hampered in our research attempts by the lack of understanding on the part of those assisting in the handling of data gathering instruments or even in the handling of data which has been gathered.

Practical considerations must be made in the development of any research design relative to the background of those being studied in terms of culture, schooling, maturity, social adjustment, and psychological adjustment. Because the need for practical considerations, in themselves, is an overall consideration in research design, the importance of each of the factors mentioned suggests the need for in depth study of these factors as they may affect the competencies of individuals or groups of individuals. It is reasonable to assume that a study of the cultural backgrounds of two groups of students may reveal differences in their ability to perform a given type of work. It is also reasonable to assume that the maturity of the student has a direct relationship to his competencies in occupational work or in the performance of a given task. Work is being done in this area at the University of Toledo. If we are to measure and appraise competencies we must also measure those factors which affect the development of those competencies.

In order to preserve the objectivity of any study of competencies consideration should be made relative to the conditions under which the study will be conducted, and to the selection of subjects to be studied. Factors such as differences in teaching staff, facilities, machines, equipment, and materials which may be used in training, or in the actual research study itself may introduce problems relative to objectivity. The appropriateness of age, experience, general abilities, interests, and attitudes in the subjects in terms of the study being made must be carefully considered in the preparation of research design. This is particularly true in experimental studies. In studies in which the distribution of the population or the occupational opportunities may have an effect on the competence or placement of those with competencies in employment, a demographic analysis of the community is often necessary. In such studies, serious consideration should be given to the reliability of the sources from which data can be obtained.

We have been concentrating on the measurement of individual competencies, however, the importance and the implications of the measurement and appraisal of competencies of large populations cannot be underestimated in the development of a program of occupational education. The nature of any given population is that of its combined members rather than that of single individuals. In measuring and appraising the abilities, aptitudes, interests, and capabilities of the individual we are supplying the necessary information for an analysis of the characteristics of an entire population. In research design involving large populations, it is necessary to determine the purpose and scope of the study and to strictly adhere to gathering information and data which will provide needed answers to problems and will be pertinent to the purpose of the investigation. Measurement and appraisal of competencies can be approached from the standpoint of studying the individual, or group of individuals, either through the qualitative or subjective survey method in which the general competencies, attitudes, or needs are studied such as case studies of individuals, or surveys similar to the Wilmington, Baltimore, and Yonkers Studies, or the quantitative and experimental method in which statistical data is collected for large group studies, matched groups, or in which controlled samples are compared after exposure to different experiences such as the Minnesota and Connecticut testing studies, or experimental studies involving the comparative values of teaching techniques.

In experimental studies involving the development of competencies and the measurement and appraisal of these competencies, determinant variables or intra-procedural factors are often detrimental to the objectivity of the resulting data. It is essential that these factors be controlled by careful planning of procedures in reference to uniform exposure of subjects in the experiment to units of instruction, instructional periods, and work or test periods. Experimental conditions of learning or measurement should be equal in all phases of such studies. Experimental studies or studies of pupil progress conducted in an area of occupational training should be carried out in a single shop to assure the similarity in spacial relations of machines to the subject, and the similarity of the adjustive movements necessary to perform particular machine operations. Variations in scheduling or time intervals between instruction and testing or between testing or retesting of individuals or groups participating in an experiment, can seriously affect the objectivity of the data obtained. The importance of scheduling, or order of procedures, in relation to interest span, memory, and fatigue is an important consideration in all experimentation and has particular application to experimentation in the development of the advanced skills. The measurement of competencies may also be affected by instrumentation or instrument decay. The change in attitudes, or of the physical condition of those engaged in observing or in rating, or the use of two different observers for each of two observations, would possibly result in a non-objective set of data. Experimentation can also be seriously handicapped by the mortality of subjects resulting from school dropouts, transfer, illness, change of class, promotion, or change of job or vocation. This factor is of extreme importance in small sample studies in which groups are being compared or in which there has been controlled sampling. The careless selection of a sample for a study can have a negative effect on the results because of bias resulting from similarity training, backgrounds, or interests.

Studies may be longitudinal such as the Minnesota Study and the Connecticut Study where the final purpose is the study of growth over a period of years, or where mathematical skills of a group of ninth grade pupils are compared with ability in these same skills at the end of the group's twelfth year. They may be latitudinal to discover skills or abilities of a particular group at a given time such as a study of the ability of twelfth grade machine shop students to turn a taper to a given set of dimensions. Studies in the measurement and appraisal of group competencies can also be cross-sectional, cutting across an entire given population to discover the range of skill or ability in a group and thus the ability of those at each end of the curve or scale. The measurement and appraisal of competencies is fundamental to the analysis of needs upon which all educational planning must be based and can be accomplished through a variety of methods and techniques properly used by competent research experts.

Conclusion

Occupational education must allow for rapidly changing technologies by providing broad backgrounds designed to develop flexibility on the part of the individual. In order to prepare the individual for employment and to meet the needs of business and industry, educational programs must be based on the measurement and appraisal of the competencies of the individual. The measurement of these competencies should be accomplished through the use of all available research methods and techniques. Where research instruments do not exist to meet the needs of measurement and appraisal, special instruments should be developed. It would seem that the value of measurement in this area would be enhanced by the creation of a data bank consisting of a progressive record of each individual's growth and progress in the development of abilities and skills. Measurement and appraisal of competencies however will be weak and possibly meaningless if the instruments used are inadequate and the researchers using them are not trained in the methodology of research. The measurement and appraisal of competencies has implications for the guidance of the individual, instructional method, program planning, school administration, and the economic growth and stability of our Nation.

EVALUATION OF OCCUPATIONAL EDUCATION:

Identification and Measurement of Student Output Variables

by

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EVALUATION OF OCCUPATIONAL EDUCATION

"Identification and Measurement of Student Output Variables"

Section I - General Perspectives

Evaluation is a very broad term and there are many possible pathways to take in a discussion of it. Therefore a useful discussion calls for some delimitation. The limits used in this paper may not be the most useful ones for all purposes but they will serve to focus this particular discussion.

First, this discussion will deal with the problems of evaluation designed for managerial decision making rather than experimental research. The decision maker needs to know if his instructions have been followed and if his instructions have obtained the results he anticipated. The experimental research worker wants to know if one method gives different results from another. The experimental researcher emphasizes the statistical significance of the difference. The manager emphasizes consistency with expectation. The researcher is interested in details; the manager is primarily interested in the end product and only uses detail steps when necessary to obtain clear measures. In general, experimental design evaluations are not satisfactory for managerial decision because they are too sporadic and because they take the detail out of the normal operating complex. They are not only unsatisfactory, but they are difficult to administer because they can only be obtained by disturbing the normal routine of operation. The importance of this point is that it frees this discussion from any excessive allegiance to experimental design, which occupies so much of the attention of educational research workers.

Managerial decision making calls for the flow of evaluative facts from the point of operation, the pupil and his responses, back to the manager. Thus management consists of a two-way stream. One branch of the stream moves instructions, orders, policies from top management down to the worker and the return branch carries information back on what happened to the product. This information flow needs to be continuous, or, at least, at regular intervals. The return flow of information is the prod that keeps management on its toes, since it is continually turning up failures in meeting expectations, which require special consideration or when the expectation is met gives management the satisfaciton of knowing it has done a good job.

In many cases an educational manager can secure useful evaluations from teacher observations and teacher grades. He uses anything that will help him make better decisions. The scientist wants to restrict his attention to items that will contribute to scientific knowledge, *i.e.*, information that can be depended upon for generalizations. Thus the needs of managers and research workers are different, although the manager should include in his thinking the actual findings of research.

Institutional Purpose

One of the problems in evaluation is the difficulty of establishing the purpose of the institution being evaluated. Much evaluation and management theory has been developed in private industry and then transferred to public institutions. Perhaps one should say that the transfer has been attempted, because many of the transfers have not been successful. Some of these difficulties have arisen because the interested persons failed to recognize that private industry has a clear-cut, easily defined purpose, the making of profits, and public institutions have loosely defined purposes that may change as the society changes. If successful transfers are to be made, the purposes of the institutions must be clarified. The area of vocational education is no exception.

In the early days of vocational education, say in the 1920-30 period, the proportion of the youth graduating from high school was less than 30 percent. Since over half the youth had good qualifications to be skilled workers, there were many not completing high school who had the desired qualifications. A simple and logical step was to create an institution to teach specific skills, rather than the already established academic program. The best of those not attracted to the academic program could be admitted to this new vocational school. The success of the school could be established by showing that the graduates were sought by employers and did in fact become good workers.

The success of the school depended on:

1. A curriculum that prepared the individual for a specific job cluster.
2. The selection of individuals suitable for both the curriculum and the jobs.
3. Frequent use of individualized teaching methods, a close personal relationship between the vocational pupil and his teacher.

The success of this early vocational school program contributed to and supplemented a general trend toward a revolution in educational thinking.

As already noted, in the 1920's less than 30 percent finished high school. Those who finished high school, including those in the vocational programs, secured better jobs and appeared to lead more satisfying lives than those who did not. The result was a continuing pressure on everyone to complete high school, and now, in recent years, to continue in technical institutes and colleges. As the proportion finishing high school increased, the character of the school changed. The number of students exactly suited for the vocational courses were limited, but the number wanting to continue increased. The result was a tendency to admit the students to these programs who did not fit the curriculums or the job clusters. Some vocational schools were reduced to dumping grounds for pupils who wanted to continue, but were obviously incapable of academic work. The result was a change in logical purpose which was not always recognized by those directing the vocational schools.

The purpose of this paper is not to give a history of vocational education, but to provide the essential information necessary for evaluation. The reason for this diversion into history is to illustrate the fact that it is not always easy to define the logical purpose of an institution. The purpose of the early vocational schools was to train selected suitable individuals for certain job-clusters. The success of the institution, by extending the demand for such training to groups of pupils not suited for existing curriculums or job-clusters, changed the logical nature of the institutions and made the traditional evaluative measures obsolete.

What Are the Logical Purposes of Vocational-Technical Education Today?

For the purposes of this paper it is not necessary to specify a single present day purpose of vocational education but rather to indicate the range of possible purposes that may be selected by individual institutions and to show the ways in which evaluation has to adjust to purpose.

Certainly the traditional goals are still acceptable for some institutions. Selected suitable individuals need training for specific jobs. However, there is also obvious need for occupational training that will accept poorly qualified workers and bring them up to the quality needed by industry for the defined job-cluster. Thus some institutions are likely to have the goal of producing well qualified workers out of persons who, in traditional schools, would have been considered nonadmissable.

Input-Output

The discussion thus far forces us to recognize that important variables are present at both ends of the school operation. The inputs vary. The school contribution is a substantial part of the gain between input and output and few outputs are good evaluative measures by themselves. Thus the discussion must cover both student input variables and student output variables, because some vocational schools are likely to be admitting different kinds of students and expecting to bring them to a common output quality by the use of variable curriculums, while others will be admitting different kinds of students and expecting them to become different end-products, even though the treatments (curriculums) may be alike.

Everyone knows that students vary. Some are good readers, some are poor, some are willing to learn abstract concepts and some want to confine their activities to the immediate and the practical. Evaluation calls for a very clear picture of the nature of the variations because the important variables must be identified and considered in valid evaluations. Much of the latent resistance to evaluation in education is the lack of validity in many evaluative assertions. Teachers have seen evaluations that did not coincide with their inner feelings, and, sometimes, the teachers have been vindicated by subsequent events. To insure that this paper will ultimately offer practical proposals, some time must be devoted to describing the nature of student variability even though all are familiar with its existence. A more precise description, at this point, will insure a common base of understanding for persons using the paper.

Human variability comes from three kinds of forces:

1. Heredity. Each individual is born with a sort of blueprint that defines his reactions to the environments he contacts.

2. Environment. Every individual responds to his surroundings.

3. Accidents or Chance. Some good things and some bad things happen to individuals accidentally. In one sense these are elements of heredity or environment but in many situations it is simpler to think of them as a third category because they happen without an apparent nonchance causal system.

Perhaps the most important point for the educator to keep in mind is that education is part of the environment and that the product of education, the mature adult, is a result of the interaction of these three forces. The part of the environment that is under the control of the educational institution is limited, and all the other forces impinging on the individual are uncontrollable from the educational point of view. The educator can try to correct for certain hereditary or environmental factors, but he must accept the student as he comes to the institution. In practice, some occupational training institutions refuse to accept students with unsatisfactory heredity or past environment, but current national policy is demanding that some suitable educational institution be available for everyone, and occupational education as a total movement must accept this more difficult assignment even though isolated institutions may escape from it.

The fact that development of the individual is an interaction between heredity and environment carries an important corollary for the educator. This is that one cannot design a curriculum and predict how all students will react to it unless one knows the heredity and prior environment of all students. Thus, if a curriculum is designed for persons who handle mathematical concepts easily, a person lacking this capacity will probably fail in it. Or a curriculum designed for the highly practical student, who is happy to work with materials and loves precision handwork, will be poison to a slightly brain damaged person who has trouble making his hands do what his head knows should be done.

A further point to remember is that the mature adult is not only the product of the school but is partly a product of the hereditary forces that determined his pattern of maturation as well as his nonschool environment. Education is not only an instruction-learning situation but it is an environment within which certain individuals will develop in a certain way in accordance with their heredity.

Many, in fact most, students have many similarities but the limited variations create very significant differences. A boy may have good eyesight, an effective brain, good hand-eye coordination but if he has one divergence, and that a serious one, such as an uncontrollable temper, he will never make a good worker. The important differences tend to be isolated specifics, and the failure in many occupational training programs is the inability of the educational institution to overcome the isolated handicaps. Thus, in looking at the potential entrants to an occupational training program, one should classify the prospective pupils by their deficiencies. Thus, the first and easiest class would be those who had no serious drawback characteristic. They are the individuals it is a pleasure to have in class. Another easy group to identify are those who are mentally slow. Some of these will make very good end products if they are given enough time. Another important group who may be hard to care for are the emotionally disturbed. A similarly hard group to plan for are the brain-damaged. Those officially identified as brain-damaged by the medical profession are a very small percent of the school population, but some studies suggest that the group actually suffering from minimum brain damag may run as high as 15 percent.[1] This classification of kinds of students needs to proceed until each group responds in a reasonably consistent manner to the various training programs designed for the different kinds of persons. Unless groups are sorted in this manner it is hard to conceive of the evaluation being precise enough to yield good facts for managerial decision making.

The result of this classification at the time of entrance of students into occupational training programs establishes groups of like individuals who can be treated to special curriculums with the prospect of producing an expected end product. Even when the classifications have been refined considerably there will be some failures in a group. The potential number of interactions between all of the heredities and all of the environments is so great that no classification can hope to take all of the differences into account. This proportion of failures should be relatively stable and can be a valuable tool for management.

The basic problem of human variability for education is well expressed by Caspari in a recent issue of the American Educational Research Journal.[2]

In this article he said:

> "As far as education is concerned, acceptance of the possibility of a heredity--environment interaction means, there-

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[1] Zigler, Edward. "Mental Retardation: Current Issues and Approaches." "Child Development Research" (Hoffman & Hoffman, editors). Russell Sage Foundation. Vol.2, 1966, p.107.

[2] Caspari, Ernst. "Genetic Endowment and Environment in the Determination of Human Behavior: Biological Viewpoint." American Educational Research Journal. Vol. V No.1, January 1968, p.54.

> fore, that for reasons inherent in human nature a system of education which is best for all individuals cannot be devised.
>
> "This is from a practical point of view adding difficulties to a field which even without this consideration is sufficiently complex. The attitude has, however, the redeeming grace that it reemphasizes the dignity of the individual. Genetically, every human being is unique, i.e., different from every other human being, that ever existed, and ever will exist--excepting of course monozygotic twins. This implies primarily subtle metabolic differences between individuals which, by means of differences in development, may become amplified into differences in morphological, physiological and mental characters. The evolutionary past as well as the evolutionary future of man are dependent on this genetic variability. The uniqueness of the individual will express itself in the unique way in which it will react to a specific environment. The challenge to education appears to me to reside in the problem of how to create educational methods and environments which will be optimally adjusted to the needs of unique individuals. The main contribution which a geneticist can make to educational research is to stress the fundamental biological fact that every human being is a unique individual and that his genetic individuality will be expressed in the way in which he reacts to environmental and educational experiences."

Once the impact of Caspari's comments have fully registered, the educator realizes that he has a more difficult job than he had previously visualized. Where one problem seemed to exist before, two or three problems are going to be in need of solution. The newly recognized complexity requires new techniques of observing and evaluating. The old techniques of traditional operations and shrewd insights of capable educators will not be enough. They must be supported by systematic control systems and feedbacks of managerial information. No one has ready made solutions to these problems, but research in evaluation has gone far enough to indicate the general nature of the probable solutions. These will be discussed briefly as abstract ideas in this first section of this paper. In Section II some actual evaluation research will be described that gives operating perspective on these ideas and which as a matter of fact have been the basis for developing the ideas, and Section III will be a specific proposal of a system of evaluative control for occupational training.

The Need for Absolute Measurement Scales

At all levels of education much of the measurement effort is relative or comparative rather than absolute. School grades, even college grades, tend to specify the approximate rank order of individuals in the work performed, rather than specifying what the person is able to do. This rank order concept is highly refined in the achievement tests of the elementary school. There are certain grave dangers in too heavy a reliance on relative measures. Unless the educator is cautious in his use of these measures he may lose sight of the minimum goals of his program. At some point one has to look at achievement and ask--will this achievement do the job?

Perhaps the problem will be clarified by an illustration from a non-educational field. The problems faced by a manufacturer of old fashioned can openers gives us a reasonable illustration. An old fashioned can opener requires a cutting edge, a handle and a bearing surface to catch on the rim of the can. The angle between the bearing surface and the cutting edge is critical or it is difficult to get the necessary purchase to tear through the cover of the can. Now suppose we had 10 manufacturers of old fashioned can openers and we gave them marks A, B, C, etc. The marks might give very adequate comparative ratings on the strength of the metal, the convenience of the handle, the sharpness of the cutting edge, etc., but, if the ratings never established the total effectiveness of the tool, the effort of all 10 producers might be wasted. The critical evaluative measure is the effectiveness of the completed tool. This is an absolute measure, a go, no-go guage in manufacturing terms. Even the fact that the tool will open one can is not enough. It must stand up for opening hundreds of cans, and the comparative difference between opening one can and two cans is not very important. (I am using this illustration because of a recent experience with an old fashioned can opener in a motel kitchenette.)

Occupational education particularly needs the discipline of setting absolute standards, minimum prerequisites in its program, and these minimums should be determined by what satisfies and what does not satisfy the employer. Similarly, clearly stated measures of capability among the entrants into a program are needed if one is to establish the actual contribution of the educational institution. Relative status of pupils at entrance and completion does not give a clear indication of what the school has added.

Longitudinal Records

Since an educational institution provides an environment in which an individual matures one must consider the individual over a period of time. The individual enters the educational institution at one stage in development, has certain developmental experiences and leaves at a new stage in development. Thus, one individual may enter almost mature and another may enter at an immature stage. In the first case the institution may turn out a fine product, but with little effort, while, with the immature entrant, the final product may represent a lot of institutional effort. For evaluation, these differences are important.

Another reason why longitudinal records going back to the educational life of the pupil are important is that some students are going to be unsatisfactory. As already noted our present cultural views do not allow us to discard these unsatisfactory students but insists that they be made into adequate members of society. Obviously some cannot be made satisfactory but society will go to great lengths to salvage them. The unsatisfactory student may be unsatisfactory because of an hereditary defect, or prior environmental insult. In such cases occupational training must find crutches of some kind to offset the defect. These crutches cannot be developed in the late teens, some have to be provided early in life to be effective. Therefore occupational education must examine the total life of the child to see how early it must intervene to achieve its goals.

The School as Molder of Developmental Pattern

The school, of which occupational education is a part, has the responsibility for insuring that a child develops in a manner that will produce an adult desired by the society. Each child tends to develop in a pattern or channel. A low IQ child tends to develop slowly in academic knowledge and tends to be a low status worker as an adult. One of the great changes in educational thought in recent years, however, is the recognition that the IQ is not really constant, that it only tends to be constant. In other words, if a school is good enough, it may stimulate some children to move from one developmental level to another. Such upward shifts in developmental level are a crucial goal of the educational process, and the evaluation of educational institutions should emphasize the extent to which they succeed in changing developmental patterns. The fact that vocational education in its old pattern of operation did this for some boys was one of its great strengths. It is relatively easy to keep a child developing in an established pattern or channel but it is hard to get him to jump to a higher level.

The Critical Time to Produce Jumps

There are probably certain ages or developmental stages at which it is particularly likely that a child will change developmental channels. Little is known about these likely times to create change but the identification of these times is an important element in educational planning.

Closely related to this problem of developmental channels is developmental stages as hypothesized by Piaget.[3] He presents the idea of successive stages in the development of children and to the extent that there are distinct stages there is always the possibility that a developmental stage will be affected by an hereditary or environmental distortion. Children suffering from these distortions must be identified and helped where possible.

These extensive comments on the general perspective of occupational evaluation lay the groundwork for a review of the research work that has been done on evaluating education; to see what elements can be transferred to the special field of occupational education.

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[3] See Hunt, J. McV. "Intelligence and Experience" New York: Roland Press. 1961.

Section II - Research in Evaluation

Occupational education has a long history of efforts at evaluation. Effective work has been done in follow-up studies to see if the graduates of the educational program were really effective. In some cases the results have been excellent and in others the follow-up studies have disclosed large numbers of unsatisfactory graduates. Few studies have explored the reasonableness of the admission policy and this is the crux of the equal opportunity problem. The shortcomings in the evaluations have seemed to stem from inadequate information about the students and varying patterns of admission policies in the schools.

The practical problem of evaluation is becoming acute in the junior colleges and technical institutes. Attempts at evaluating them by the standards of the college accrediting agencies face obvious difficulties. College accreditation is largely a system of observation by well qualified, experienced observers. By its nature the judgments are organized around traditional ideas of college organization and purposes. The whole junior college movement is a break with tradition and has new purposes and a different kind of student population. Where the purpose is specific occupational training the danger in traditional accreditation is acute. The occupations are so varied and the kinds of students so different that some of the best programs do not conform to college tradition. The evaluations of occupational training apparently require objective measures of clearly stated purposes. Too many elements are in a state of flux to allow for the slow accumulation of the traditional wisdom that gives college accreditation its strength.

Since the accreditation experience does not seem to yield the research foundation needed, one must look further afield for inspiration and factual support for new planning. The available areas for review seem to be management theory and control systems, as developed in industry, and a few exploratory studies of such practices in education.

Industry, for many years, and more recently some governmental agencies have been developing a scientific approach to management. The first studies were often titled scientific management and more recently such terms as quality control, operations research, systems analysis, programmed budgeting, cost-benefit analysis and, in education, quality maintenance have come into prominence. They all refer to management schemes with a systematic relationship between policy decisions and results. They all call for systematic observation of results and the use of the results to guide decision making. The pressure on education to use these management techniques is great, but little can be done unless practical methods of observing and reporting results can be developed.

Educators have been convinced from the early days of education that individual students should take examinations to establish how much they have learned. Educational institutions use teacher-made tests, national tests such as College Boards, achievement tests and in New York State the well known Regents Tests. These are aimed at the individual and establishing how he is doing rather than at the institution to measure how well it is doing. Quality control in industry has the dual function of insuring the quality of the product and the quality of the factory operation. The achievement tests in the elementary and secondary schools have been used to some extent to measure school quality but the results have been discouraging. In too many cases the results did not correspond with the judgment of qualified observers and the interpretation of the results was confusing.

In the late 1940's the Research Offices of the New York State Education Department began a sustained effort to find a fair way of evaluating schools and this effort, which has now continued for over 20 years, has yielded some important dividends. Recently a major study in this area has been organized in California[4] and studies have been conducted in Pennsylvania and Kentucky. Iowa has long been a pioneer in school achievement tests and has used them for school evaluation.

The first important findings in the New York study were that the tests, particularly the group IQ tests, were subject to errors of administration. Secondly, there were true variations in patterns of mental development between different kinds of pupils which made the idea of the constant IQ theoretically unsound. Much educational theory and evaluation had revolved around the constancy of the IQ and when various studies, including the New York State Study, invalidated this concept there was growing recognition of a need for some other control concept.

In the mid 1950's New York State started its Quality Measurement Project which aimed at securing large numbers of pupil records in a sample of 100 school systems and developing a fair scheme of evaluating the systems. This study yielded many valuable findings. From the first it was recognized that the basic difficulty revolved around the many variables that affected the quality of the schools. Early in the study it was noted that some school systems which had been considered "lighthouse" schools, leading the way to better educational methods, were just fortunate schools that had a lot of bright children who had been given very high intelligence by their inheritance or the favorable environment of their home life. Since these conditions could be identified by studying the community, a first step in improved evaluation was to classify the school districts by the characteristics of the community. This resulted in the development of norms of expectancy for different kinds of communities. Thus one could have a norm for large cities and another norm for the suburban communities, etc. Each community could then compare itself to a norm for its kind of community. This immediately showed that the kind of community was an important factor in determining the quality of a school. The method had an important limitation, however, in that the more detailed the classification the fewer school systems would be classified into any single group, and soon the number would become so small in each group as to preclude any comparison. It also was difficult to compare the effectiveness of schools in different groups.

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[4] In 1967 a group of California school districts organized a major study of management methods under the title "Operation PEP," a statewide project to prepare planners in California. The address is 1870 El Camino Real, Burlingame, California, 94010.

Even with these limitations, the study yielded data that pin-pointed schools which were doing a relatively poor job and provided some information pointing to causes of differences in quality other than per pupil expenditure. In other words the findings supported the idea that improvements in school operation could be made by ingenuity rather than being entirely dependent on per pupil expenditure.

A refinement of these school district results showed that if the reading level of school districts is used as the dependent variable, and regression coefficients are obtained for the variation in the schools by expenditure, parental education or parental occupation, then most of the variation is accounted for by parental characteristics rather than by the amount spent per pupil. Thus there was ample evidence that classification by school district characteristics is essential to fair comparisons between districts.

Analysis by Kind of Pupil

The evidence provided by school district classification was a major advance but still did not provide across the board comparisons. The question was then raised of the possibility of pupil classification, so that one could see how a kind of pupil behaved in different schools. In many educational experiments students had been matched as to their characteristics. The proposal pursued the same idea by identifying a group of children in each of several schools who would be essentially alike, and then comparing the achievement of this particular kind of child in the various schools.

To test out the idea pupils were grouped by the socioeconomic status of their parents. This avoided the usual method of classifying pupils by IQ which had been challenged by the new evidence showing that the IQ was not constant. The results were striking: norms of expectation were obtained for various grades for high, medium and low socioeconomic children and some schools which had been considered of doubtful quality were found to be doing better than the state average. For instance, a school primarily dealing with low socioeconomic students might have low achievement tests results compared to other schools in the State because of its high proportion of students from the low socioeconomic group, but when its achievement test results for the low socioeconomic pupils were compared with achievement test results of low socioeconomic students in other schools they were relatively high. Thus this type of analysis showed that our previous assumptions as to quality were definitely wrong. In fact, some of the schools that had lots of good students and high per pupil expenditures were not up to the state average in their education of the low socioeconomic student. Perhaps it is worth pointing out that this is an illustration of the difficulty of designing a school system which is good for all. The schools that were good for the high socioeconomic student were frequently not good for the low and vice-versa. A few schools seem to have a clear enough picture of the differing needs of different kinds of students to do well for all socioeconomic groups.

The vital point here is not the narrow one, that children with different socioeconomic backgrounds have different needs and perform differently in different schools, even if this narrow point is of importance, but, rather, is the indication that when pupils are classified by an important characteristic other than IQ their performance is different. Socioeconomic differences should not, at this point, be considered the ideal way of classifying children; it is just one way of doing it.

One of the other easily available classifications in New York State data was the IQ of each child. This was used to establish expectancies for low, middle and high IQ pupils. This classification was, of course, an important one. High IQ children do well in school, as one would expect, but one of the interesting points is that some schools have unexpected inconsistencies in their ratings by socioeconomic and IQ classifications. For instance, some schools seem to be better in dealing with the low IQ children than with the low socioeconomic children.

Another interesting fact that came out of the analysis was that an appreciable number of low IQ children may do well in at least one subject. This raises new questions about the meaning of the IQ. How can a really dull child do well in arithmetic? Perhaps any child who does well in one subject should be assumed to be potentially a high IQ child held back by some special factor.

As an incidental study, children of low socioeconomic background were classified by IQ in the fourth grade and then the same children were classified by IQ in the eighth grade. A high proportion of those who were low in the fourth grade, 70 to 79 IQ, were 20 to 30 points higher by the eighth grade. In other words low IQ children from the low socioeconomic group have a fairly high likelihood of really being average IQ or higher children. This seems to be conclusive evidence that the educational institutions should definitely try to change IQs, rather than accept them. The change in IQ would then become a measure of school output.

The Stochastic Process

One of the serious limiting factors in using classifications of children for educational measurement is the difficulty of measuring the critical characteristics such as temperament, health, emotional stability, and attitude. The classification by socioeconomic status and IQ is fairly easy to obtain in most schools, but to make a comprehensive classification scheme appeared to require an expensive testing program. In 1963 New York State, under its Experimental Program, supported an exploratory study of what could be done with existing pupil records to measure the educational progress of the students. The study grew out of a series of previous studies of over- and under-achievement, which had resulted in inconclusive or contradictory findings. It was hoped to bring order out of the chaos of the then current thinking by organizing all the available data in a longitudinal study to see what information was actually available. The study drew from the regular pupil record files as complete a record as possible of the progress of 1300 children from first grade through the eleventh grade. As other studies have found, such records are hard to organize in such a way as to give clear statistical pictures of what has happened. After some difficulty the concept of the stochastic process was accepted as the best general attack, and form this point on the study began to yield interesting results.

Another critical factor in the ultimate success of the study was the design of a simple graphic pupil record file. The usual pupil record file packs a lot of information in a small space. For the purposes of this study the focus was on ease of classifying the pattern of development of the pupil. Compactness and precision of detail were sacrificed to yield a graphic summary presentation that could be interpreted and summarized at a glance to utilize the concepts of the stochastic process. This was a simple analysis, not the difficult mathematical processes one finds in some advanced math books. The dictionary defines stochastic as "Denoting the process of selecting from among a group of theoretically possible alternatives those elements or factors whose combination will most closely approximate a desired result." The tree diagram is a simple way of presenting such a process and the interesting results of this study were largely presented in this form.

In order to report the findings of the study and make the implications for the evaluation of occupational education clear a sample of a tree diagram must be included in this paper (See Figure I). Figure I shows three tree diagrams of achievement test status proceeding from elementary school, through junior high and senior high. The first tree diagram (group 1) shows the behavior of 616 high socioeconomic group children. The second (group 2) shows the behavior of 386 middle socioeconomic group children and group 3 shows the distribution of 77 low socioeconomic group children. Actually, if the sheet of paper were larger, this could have been presented as a four-step tree, rather than a three-step, by putting all the 1079 children in a single group and then breaking them into the three socioeconomic groups, and each of those into the good, fair, and poor group for elementary school and so on. An examination of the tree diagram for group 1 shows the technique. The first step breaks the pupils into their achievement test response in elementary school, the second step breaks each classification shown in junior high, etc. Note that the percentage breaks are given in parentheses. Thus of 266 pupils achieving good scores in elementary school 170, or 64 percent, achieved good scores in junior high and of the 170, 146, or 86 percent, secured good achievement test results in senior high. Now, dropping down to the bottom of the page, note that 233 were poor in elementary school and only 27 of these were good in junior high (12 percent) and of these only 16 (59 percent) were good in senior high. Note that the senior high prospect of a pupil who did poor work in elementary school but good work in junior high school is not so great (59 percent) as for one who did good work in both elementary and junior high (86 percent). It is interesting for purposes of seeing the power of this kind of analysis to look at group 3 even though the number of pupils is rather low (77) for generalizing. Of those who were good in elementary school only 6 were good in junior high (30 percent) as compared to 64 percent in group 1. In other words, if a child is from the low socioeconomic group and starts well in elementary school his prospect of slipping in junior high is much higher than for those from the high socioeconomic group with the same good start. However, once he has cleared the junior high hurdle, the low socioeconomic person has as good or a better chance to do well in senior high as the high socioeconomic person (100 percent to 86 percent). Similarly, of those in the poor group from the low socioeconomic classification the rate of moving from the poor to the good is well below the rate for those in the high socioeconomic classification.

The power in this technique lies in the fact that, by using the information readily available in the school records, and classifying by a series of such measures, one can describe a pupil more and more accurately and secure a clearer and clearer expectation of what he is likely to do in the next step of the normal process of his educational development.

A review of this type of data suggests many hypotheses that school managers should consider. First, what happens between elementary school and junior high that makes so many children drop lower in their achievement level? Is this a necessary result or could relatively simple changes make important differences? Also if some children can improve from elementary to junior high school why can't more do it? Why does socioeconomic status make so much difference in the progress of the children, even after they have apparently established their ability level?

With this presentation of the general nature of the analysis some of the other findings of the study can be presented more briefly. The items selected for comment here are those that bring out the nature of pupil development or that show the possibility of using the data for comparative evaluations.

Tree diagrams were prepared for teacher grades as well as for achievement test results. In some ways these were even more striking.

Of 348 boys[5] who rated good in elementary school only 168 (48 percent) rated good in junior high, and of these only 93 (55 percent) rated good in senior high. In other words, only 93 out of 348 (or 27 percent) rated good all the way through. The figure for the girls was a little better, 32 percent. For the boys who were poor only 5 out of 152 (or 3 percent) were good in senior high school. Almost 10 percent of the girls had good grades in high school.

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[5] Note that this is drawn from another table than that showing socioeconomic status in Figure II.

Looking at the number who ended up poor: of the 384 boys who started out good in elementary school 199 (or 57 percent) ended up poor in senior high school. Of the 152 boys who were poor in elementary school 132 (or 87 percent) were still poor in senior high school.

The higher attrition rates in the teacher grades than in achievement results was a surprising development. Careful examination of individual records indicated that teacher grades were a more sensitive indicator of the work characteristics of a pupil than achievement test scores. A pupil who was starting to slip in his work would get poor teacher grades one or two years or more before it would show up in achievement test results. This suggests that a careful analysis of teacher grades might be a helpful managerial tool. Teacher grades, as currently used in the public schools, are a result of distinct philosophies of grading varying from teacher to teacher. If there were more inservice training on how to grade they could probably be made into an even more valuable tool.

Another interesting analysis was a comparison of IQs from the elementary to junior high and senior high for identical children. Of 112 children with IQs of 100-109 in the elementary school there were 3 who showed 120 or better by senior high and 32 showed 110-119. In the other direction 7 were down to 80-89 and only 1 was below 80. Thus the proportion moving up was substantially higher than the proportion moving down, and the proportion moving substantially (more than 10 points) was considerable, 43 out of 112 (or 39 percent). This is further evidence that group IQ results should not be taken as conclusive evidence of a pupil's ability.

Variation by Schools

For evaluation purposes one wants to compare schools or compare how a school performs at one time in comparison to another. Therefore one should examine the stochastic process results to see if they yield results with large enough differences to aid in managerial decision making. For one such comparison the children were identified as doing above grade level work in reading and in arithmetic in the fifth grade, and then classified by teacher grades in senior high school. In the best school in the 10 studied, 66 percent of those doing above grade level work in the fifth grade were securing good teacher grades in senior high. In the poorest school in the 10 studied the proportion dropped to 25 percent. The sample sizes were such that the differences were five and six standard deviations apart, overwhelmingly statistically significant and, obviously significant operationally.

Another interesting comparison was to classify by grade five reading level and then to compare the senior high achievement scores. For pupils reading at the ninth grade level in fifth grade, in the school that showed good teacher grades in the discussion above, 100 percent had good achievement test scores, where the poorest school in the discussion above had 67 percent. Those at the seventh grade reading level in the fifth grade showed 94 percent good achievement test results in senior high compared to 33 percent in the poor school. Of those at grade level in reading the good school

Figure I

Achievement Test Results of Pupils Classified by Socioeconomic Group: Elementary, Junior High, and Senior High School

Group 1 Element. No. (%)	(N=616) Jun.High No. (%)	Sen.High No. (%)
266 (43) Good	170 (64) Good	146 (86) Good
		19 (11) Fair
		5 (3) Poor
	71 (27) Fair	42 (59) Good
		26 (37) Fair
		3 (4) Poor
	25 (9) Poor	9 (36) Good
		8 (32) Fair
		8 (32) Poor
117 (19) Fair	39 (33) Good	29 (74) Good
		7 (18) Fair
		3 (8) Poor
	45 (38) Fair	27 (60) Good
		13 (29) Fair
		5 (11) Poor
	33 (29) Poor	12 (36) Good
		14 (43) Fair
		7 (21) Poor
233 (38) Poor	27 (12) Good	16 (59) Good
		7 (26) Fair
		4 (15) Poor
	34 (15) Fair	12 (36) Good
		11 (32) Fair
		11 (32) Poor
	172 (73) Poor	13 (8) Good
		NA Fair
		NA Poor

Group 2 Element. No. (%)	(N=386 Jun.High No. (%)	Sen.High No. (%)
104 (27) Good	42 (40) Good	37 (88) Good
		3 (7) Fair
		2 (5) Poor
	38 (37) Fair	21 (55) Good
		15 (39) Fair
		2 (5) Poor
	24 (23) Poor	7 (29) Good
		7 (29) Fair
		10 (42) Poor
67 (17) Fair	15 (22) Good	7 (47) Good
		2 (13) Fair
		6 (40) Poor
	20 (30) Fair	10 (50) Good
		6 (30) Fair
		4 (20) Poor
	32 (48) Poor	9 (28) Good
		5 (16) Fair
		18 (56) Poor
215 (56) Poor	2 (1) Good	1 (50) Good
		Fair
		1 (50) Poor
	27 (12) Fair	7 (26) Good
		9 (33) Fair
		11 (41) Poor
	186 (77) Poor	6 (3) Good
		25 (13) Fair
		155 (81) Poor

Group 3 Element. No. (%)	(N=77) Jun.High No. (%)	Sen.High No. (%)
20 (26) Good	6 (30) Good	6 (100) Good
		Fair
		Poor
	6 (30) Fair	3 (50) Good
		2 (33) Fair
		1 (17) Poor
	8 (40) Poor	Good
		1 (13) Fair
		7 (87) Poor
15 (19) Fair	3 (20) Good	2 (67) Good
		1 (33) Fair
		Poor
	2 (13) Fair	Good
		1 (50) Fair
		1 (50) Poor
	10 (67) Poor	Good
		1 (10) Fair
		9 (90) Poor
42 (55) Poor	2 (5) Good	1 (50) Good
		1 (50) Fair
		Poor
	1 (2) Fair	Good
		Fair
		1 (100) Poor
	39 (93) Poor	Good
		2 (5) Fair
		38 (95) Poor

Figure II

Teacher Grades of Pupils Classified by Socioeconomic Group
Elementary, Junior High, and Senior High School

Group 1 Element. No. (%)	(N=698) Jun.High No. (%)	Sen.High No. (%)	Group 2 Element. No. (%)	(N=424) Jun.High No. (%)	Sen.High No. (%)	Group 3 Element. No. (%)	(N=82) Jun.High No. (%)	Sen.High No. (%)
491 (71) Good	275 (63) Good	172 (62) Good	237 (56) Good	107 (45) Good	53 (50) Good	62 (76) Good	20 (32) Good	10 (50) Good
		46 (17) Fair			15 (14) Fair			5 (25) Fair
		57 (21) Poor			39 (36) Poor			5 (25) Poor
	82 (16) Fair	7 (8) Good		58 (24) Fair	6 (10) Good		12 (19) Fair	1 (8) Good
		23 (28) Fair			12 (21) Fair			1 (8) Fair
		52 (64) Poor			40 (69) Poor			10 (84) Poor
	134 (26) Poor	1 (1) Good		72 (31) Poor	1 (2) Good		30 (49) Poor	Good
		11 (8) Fair			6 (8) Fair			Fair
		122 (91) Poor			65 (90) Poor			30 (100) Poor
94 (13) Fair	38 (40) Good	18 (47) Good	69 (16) Fair	34 (49) Good	17 (50) Good	6 (7) Fair	1 (17) Good	1 (100) Good
		8 (21) Fair			6 (18) Fair			Fair
		12 (32) Poor			11 (32) Poor			Poor
	10 (11) Fair	2 (20) Good		10 (14) Fair	4 (40) Good		1 (17) Fair	Good
		2 (20) Fair			2 (20) Fair			Fair
		6 (60) Poor			4 (40) Poor			1 (100) Poor
	46 (49) Poor	2 (4) Good		25 (37) Poor	Good		4 (66) Poor	Good
		Fair			1 (4) Fair			Fair
		44 (96) Poor			24 (96) Poor			4 (100) Poor
113 (16) Poor	15 (13) Good	7 (47) Good	118 (28) Poor	11 (9) Good	1 (9) Good	14 (17) Poor	4 (29) Good	2 (50) Good
		2 (13) Fair			3 (27) Fair			1 (25) Fair
		6 (40) Poor			7 (64) Poor			1 (25) Poor
	12 (11) Fair	3 (25) Good		7 (6) Fair	Good		Fair	Good
		2 (17) Fair			1 (14) Fair			Fair
		7 (58) Poor			6 (86) Poor			Poor
	86 (76) Poor	1 (1) Good		100 (85) Poor	Good		10 (71) Poor	Good
		NA Fair			8 (8) Fair			1 (10) Fair
		NA Poor			92 (92) Poor			9 (90) Poor

showed 26 percent getting good achievement test results and the poor school had none getting good achievement test results. This type of analysis suggests that good grade level reading in the fifth grade is not enough to prepare pupils to do good work in high school. This is an illustration of the point made in the first section of this paper that there should be absolute measures of achievement rather than relative measures. Pupils need a certain reading ability to do what is expected of them. If the average student doesn't do this level it means that the school is not doing what it should. Even in the good school the grade level for reading was not adequate for insuring good achievement levels in high school. This is pretty strong evidence that the school expectations should be changed.

This section has shown that there are numerous tools available for evaluating schools with greater precision than has been considered possible in the past. Few of these tools have been supplied to occupational education and fewer still to occupational education at the college level. The next section of this paper will deal with a description of the evaluation problem at the college level and discuss the ways in which these tools can be adapted to the college level problem of evaluating occupational education.

Section III - A Proposal for Evaluative Control in Occupational Education

Every institution faces the problem of insuring the quality of the work it does. Complex social institutions such as school or colleges involve so many facets of excellence that the development of a balanced quality maintenance program is very difficult. Accreditation of high schools and colleges has been highly developed and is perhaps the most commonly accepted control device. It has a number of serious weaknesses. Among these are the subjectiveness of observations by visiting committees, the tendency to give heavy weight to visible material standards and the tendency to relate soundness of program to traditional goals. The problems are particularly acute where new educational institutions mushroom under the surge of new social forces. The rapid development of junior colleges and technical institutes represents this kind of a situation and many able persons are struggling with the problems of extending college accreditation to them. Accreditation is of great value and is extensively used to justify public and private support of the existing institutions. Everyone putting money into institutions wants to know that the money is well spent and that the institution really does what it purports to do. The allocation of funds is often highly traditional and new ideas and new needs sometimes are inadequately supported. For justification new institutions need sensitive evaluative tools that will measure the new goals.

The underlying or essential problem is the developing of evaluative devices that will respond to the immediate goals of the institution. In educational institutions, this means that the evaluation must revolve around the product, the educated adult, and how he meets the social need. Fine libraries, emphasis on the humanities and restricted admittance may have met the needs of colleges in the past, and are good standards for some institutions now, but other kinds of institutions must have public support if current needs are to be met. Some institutions must take unattractive candidates and help them become valuable citizens. No traditional standards are available for this necessary function, but society cannot afford to pour money into institutions that purport to do this unless there is strong evidence that the institutions are achieving their goals.

As already noted the hopeful direction for evaluative system development is to draw on the accumulating knowledge of management principles.

The keys to managerial control are:

1. Clear statement of purpose and the governing philosophy.
2. Knowledge of what is actually happening in terms of purpose.

3. Identification of the critical change points in the operation being managed.

An institution that has met these criteria can summarize its operations in a form which will satisfy the public on the quality of its performance. This will be a justification in the frame of its purposes, rather than in traditional terms, and will provide the needed flexibility to justify new institutions for new purposes.

The remainder of this paper will be devoted to outlining the existing situation in occupational education and the procedures that can be expected to develop into the needed control systems. The actual managerial control practices of technical institutes have not been systematically explored. The American Technical Education Association recognized the need for more information in this area several years ago and in 1964 started to plan for developing this type of information. It applied to the U.S. Office of Education for a grant and secured funds for a pilot study on the problems of managerial control. The actual title of the study was "The Development and Testing of Instruments and Procedures for a Study of Student Selection Practices in Technical Education Programs."[6] The economy moves since that time have prevented the hoped for major study. However, the pilot study findings give a reasonable base for this discussion.

The pilot study covered five institutions selected for recognized high quality of work and for variation in characteristics. The five included public and private, restricted entrance, and open entrance institutions and they were widely scattered geographically. Therefore, the findings should represent what is happening in good institutions rather than an average condition.

In general the managerial information available in these institutions concerning student gains and student characteristics was limited. In summarizing the results and conclusions the report said:

> "The useful practices found
>
> While only one institution visited had a comprehensive system of reporting and control that appealed to the interviewing staff as reasonably complete in following the progress of the individual, all had specific operations that seemed to contribute to the maintenance of quality. None had a comprehensive system of institutional self-evaluation. Among the useful practices were:
>
> 1. Special curriculums for persons with inadequate prior education.

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[6] Office of Education Grant Number OEG 1-6-068255-0507. The Vocational Education Act of 1963 P.L. 88-210 Section (4c). George S. Whitney - Principal Investigator.

2. Specific efforts to help students overcome areas of weakness.

3. In-service training for teachers.

4. Personality ratings by high school staff for pupils to be considered for admission.

5. Careful ratings by teachers and work supervisors involving work habits and attitudes.

6. Extensive counseling to help students select proper programs.

7. Follow-up on graduates to establish kind of job and success in filling it.

8. Placement service to insure that all graduates get jobs.

9. Comparison of characteristics of students with success in school programs.

10. Frequency distribution review of grades given to identify weak spots in curriculum or teaching staff.

11. Lateral transfers from curriculum to curriculum within an institution to help students find a program they like and in which they do good work.

"Implications of the findings

1. The selection process must be considered in relation to the program. There is no value in admitting students unless the admitting institution has a program suitable for them as individuals as well as aimed at their goal.

2. Curriculums must be designed for types of persons as well as for job clusters. The pre-technical course discussed in prior sections of this report is an illustration of a course designed for certain types of individuals with certain goals.

3. The selection process cannot be satisfactorily judged until objective standards of educational success have been established. At present no one knows what kinds of marginal students can be helped or what the maximum capacity of a student might be.

4. The selection process must consider the needs of the whole group. From the social point of view, an institution has not established the soundness of its admission policy by showing that everyone admitted succeeded. It also has to show that everyone who might logically have applied and was capable of doing the work was admitted.

5. The establishment of objective standards will require the maintenance and analysis of longitudinal record files. The essence of quality measurement in these institutions is in relating guidance decisions with results and this can only be done by following the individual over a period of years through the whole process of admission, education and early job experience.

"General comments

The most serious difficulty in the selection process from the viewpoint of this study appears to be the limited concept of institutional responsibility of making a success of the student who comes to them. Many merely select the ones that seem to be obviously suited to their programs. Others, the open admission type, consider that they have met their responsibility when they have admitted the student and the student adjusts to their offering or drops out. None of the schools visited had a continuous program of determining why dropouts occurred or what their characteristics were. In one school visited there was a general effort to open alternative routes specifically designed for the identified needs of particular students or kinds of students and in two others there were limited alternatives.

All of the schools probably have programs that are used successfully for meeting particular problems. The schools with a pre-technical program or corrective courses illustrate this. These are excellent as far as they go and represent a most commendable alertness on the part of the administrators in seeing a need and meeting it. However, the recognized needs appear to be only a few of the needs. The basic need is for a system of responsibility that will result in statistical analysis of the school operations so that all the needs will be observed and met. To do this, records must be kept of what happens to different kinds of students as they proceed through the technical programs. The policies of the counselors must be checked against the realities of who succeeds and who fails. The failures must all be studied to establish the cause of failure and reviewed to see if the cause is an invariate that cannot be modified. If an adjustment is possible, the technique of the adjustment must be worked out.

One school acting alone can seldom determine the ultimate possibility inherent in each type of pupil because the various potentials will only show themselves in different environments. If expectancies could be worked out in a cooperative program among a group of schools there would be an interesting possibility of getting effective action at the school level."

Having established the fact that technical institutes have not developed satisfactory ways of evaluating their programs, the next step is to propose a workable plan for securing the necessary data.

Referring to Section II of this paper the experience in public school evaluation shows that classification is essential to separate out the effect of the multiplicity of causes. Many educational studies have approached the multiplicity of causes by using regression coefficients. These are useful for determining the relative importance of causes and for predicting results, but they do not lend themselves to operational decision making as well as classification does by isolating single factors. Therefore, for our design purposes we should consider a system of classification, although an effective system of predicting from regression coefficients and comparing prediction and result is possible. In the public schools the classification by type of school district was quite effective. In the case of technical institutes the classification by kind of institute or kind of program would be of some value, but the variations from institution to institution are so numerous that it does not seem very promising. This leaves the classification of individuals as the crucial device for securing the precision of observation needed for managerial control.

The institutes cannot afford to engage in an exhaustive testing program for each applicant but they can get transcripts of their high school records. From the high school record and an interview, the admissions officer of the technical institute can classify the students into several groups. For each curriculum the admissions officer could estimate the kind of work to be anticipated if the person under consideration were admitted to the program. Thus a person with a good high school record and who gives a good impression on interview should be expected to do well in a difficult curriculum. A student who has barely secured his high school diploma with a heavy load of D's and occasional F's can be expected to fail if placed in a difficult curriculum. An in-between student could be expected to get through a difficult curriculum but not to do well in it.

Once a student was identified in an expectancy group, a code number could be added to his identification number and at the end of the first semester, by a simple sorting and tabulating operation, the course results could be reviewed in comparison to the results expected by the admissions officer. The report for a physics course might be as shown in Figure III.

This simple table would point to a number of items that should receive the attention of the top administrative staff. First, why should five individuals in the promising group get D's? Is there a transition problem for some students as they move from high school to technical institute? Or is the trouble in the way the physics course is presented? Or, looking at the hopeless group, was the classification of hopeless re-

Figure III

Report for Physics I, Fall Semester 1969

Type of student	Total number	Receiving				
		A's No. %	B's No. %	C's No. %	D's No. %	Failing No. %
Promising	50	25	10	10	5	--
Good	50	15	20	10	4	1
Poor	50	--	5	10	25	10
Hopeless	50	--	1	10	20	19

liable when one student received a B and 10 got C's? However, when tables like this are maintained for several years, they can be compared and, if the proportion of the promising students getting A's goes down, something has happened and management should find out if the reason is good or not good. Such an event might be the result of a change in the judgment of the admissions officer or in the way the course was presented. In either case management should know how its instructions are being carried out.

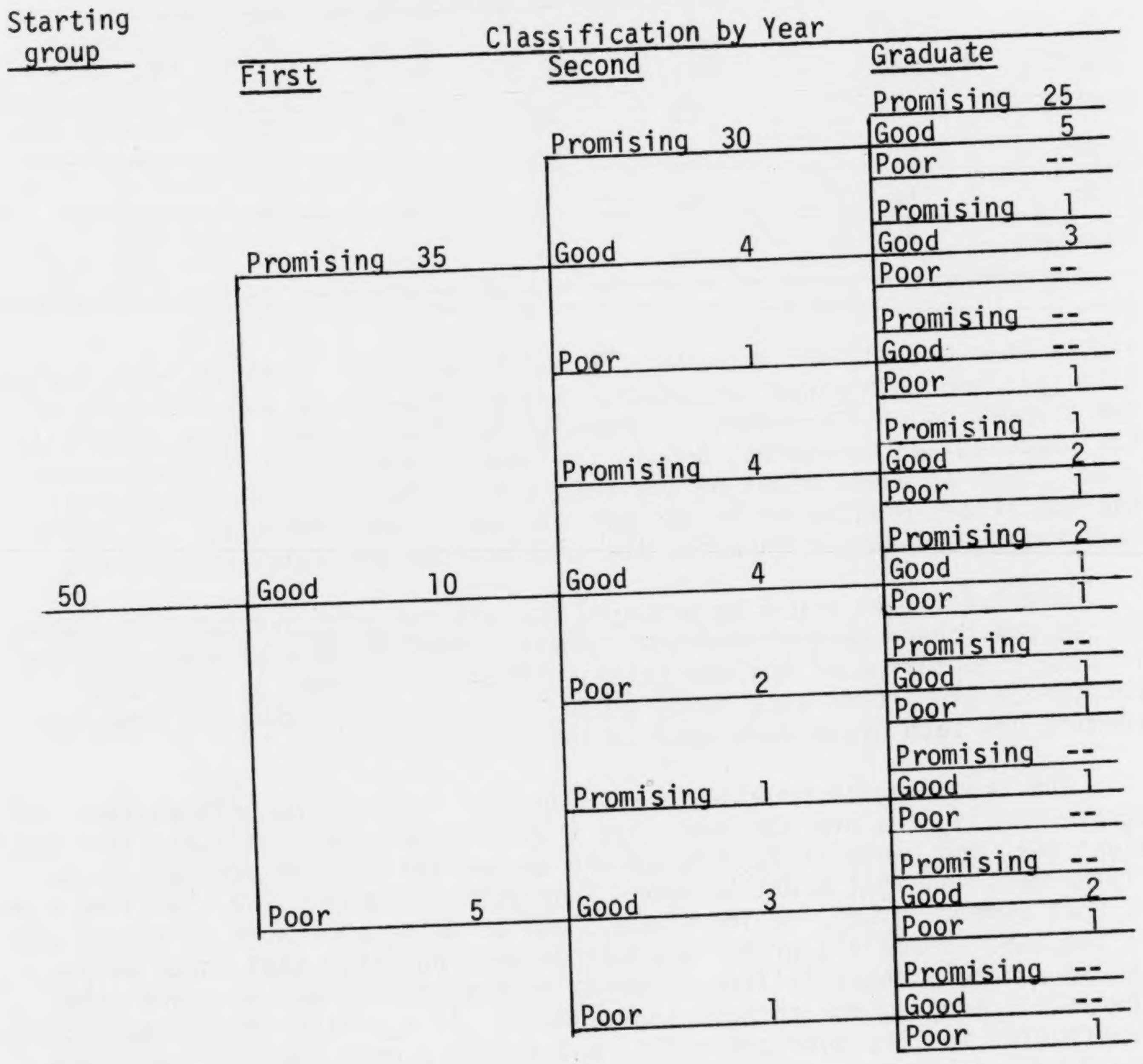
Similar tables would be prepared for all subjects and for each semester in the career of the students. Where a student demonstrated that the initial expectation of the admissions officer was wrong, he should be shifted to his proper expectancy group. Tree diagrams could be prepared showing how each group developed in the institute.

The tree diagram provides a good deal of interesting information. Of course the figures are not real, but they are the kind of figures that one might get, and hence it is interesting to see the kind of managerial decision material that might be drawn from such a report. The startling item is that several promising individuals end up doing poor work in school and on the job. Since all prior information had indicated that these people should succeed, their failure suggests that something may be wrong with the school program for certain individuals. If a similar tree diagram were constructed for the poor prospects, and a high proportion succeeded, one would logically wonder if one's judgment of what constitutes good material was correct. Such a finding would support the idea that educational opportunity was affected by prejudice of some kind.

Once this pattern of analysis is started and really used in an institution, many improvements will be developed. More elaborate or sharper classification schemes will be devised. Better techniques of determining who will succeed will be found when the admissions officers face an annual report that shows their successes and failures. The experience in factories and in education is that the managerial staff only come to use this type of material slowly. They are in the habit of making decisions on the basis of inadequate information and it is easier to go on in the old pattern

Figure IV

Tree Diagram of the Promising Students, Class of 1969


Starting group
Classification by Year
First
Second
Graduate
50
Promising 35
Good 10
Poor 5
Promising 30
Good 4
Poor 1
Promising 4
Good 4
Poor 2
Promising 1
Good 3
Poor 1
Promising 25
Good 5
Poor --
Promising 1
Good 3
Poor --
Promising --
Good --
Poor 1
Promising 1
Good 2
Poor 1
Promising 2
Good 1
Poor 1
Promising --
Good 1
Poor 1
Promising --
Good 1
Poor --
Promising --
Good 2
Poor 1
Promising --
Good --
Poor 1

unless there is pressure for change. The new techniques will only be accepted under inservice training programs and under the pressure of someone in authority who insists on knowing the kind of a job that has been done. In many cases this will be the chief executive of a political unit, his budget agency or a legislative body. The pressures for the use of this kind of material are already building up and the wise executive will form the habit of thinking in this pattern before the outside pressures force his hand.

This type of material is very valuable to the individual institution, but becomes even more valuable as it is produced and used in a fairly standard form by many institutions. When similar material from a group of institutions can be put together one can establish a standard of expectation for different kinds of individuals, and some institutions are likely to be better adjusted to certain individual needs than others. By studying the characteristics of the institutions doing well, other institutions can get ideas for improvement. Thus the technique has a built in system for gradual improvement and for maintaining good practices once they are established.

The discussion of the reports thus far has been in the framework of managerial decisions. The same data will be valuable to those planning on curriculums. It will immediately focus sharper attention on design of curriculums that will connect kinds of persons and kinds of jobs, instead of allowing the curriculum planners to think in terms of jobs only, as they sometimes do. It will also focus attention on the persons failing to get in the present programs or failing to succeed if they do get in. There is reason to believe that, if suitable attention is focused on the problems of these people, methods of meeting their problems can be devised.

The Immediate Next Steps

If a few institutions engaged in occupational education would set up a routine for maintaining the type of records suggested, the ideas could be tested in a year or two. The cost of maintaining the records in an institution with a computer available for record keeping would be very small. The biggest expense in getting the technique started is training people to use the material after it is available. A revolution in educational management methods is waiting for an entrance cue.

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A CONCEPTUAL MODEL FOR THE EVALUATION OF CHANGES IN SELECTED PERSONALITY VARIABLES THROUGH OCCUPATIONAL EDUCATION

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A CONCEPTUAL MODEL FOR THE EVALUATION OF CHANGES IN SELECTED PERSONALITY VARIABLES THROUGH OCCUPATIONAL EDUCATION

INTRODUCTION

"The education of man is a human awakening" says the twentieth century philosopher Jacques Maritain (1942, p.9). Such a broadly based frame of reference provides a groundwork upon which a responsive superstructure of educational process can be laid. The implication is, of course, that education is a dynamic process involving the total man in relation to his total environment. Maritain further states that:

> "The purpose of elementary and higher education is not to make the youth a truly wise man, but to equip his mind with an ordered knowledge which will enable him to advance toward wisdom in his manhood. Its specific aim is to provide him with the foundations of real wisdom, and with a universal and articulate comprehension of human achievements in science and culture, before he enters upon the definite and limited tasks of adult life in the civil community, and even while he is preparing himself for these tasks through a specialized scientific, technical, or vocational training," (1942, p.48).

The tone of these two quotations from Maritain form the basis on which this paper is founded and from which it springs. It is the belief of the present author that the growth and development of occupational education can be enhanced by a more concerted effort at reaching the total man and therein lies a challenge of high priority.

It is well known that many of our American people perceive occupational education in stereotypic fashion as education for the less bright, for the lower socio-economic masses, for the children of the "other family" and in summary "not the kind of education I want my child to have." Indeed too many regard it more as training than as education in Maritain's sense; yet few regard the academic phase of secondary or higher education as training, but rather as true educational process. Why is there a difference in perception? Is such a perceived difference justifiable?

While it is true that much of this poor image can be attributed to the lack of real understanding of present day occupational education on the part of many people, Grant Venn in his recent book stated: "In short, effort is scattered and students deterred; only when vocational education is accorded a better defined and accepted place within the educational community will these obstacles be overcome," (1964, p.31). It is clear that one of the immediate tasks for occupational education is that of gaining wider acceptance within the educational community. Such acceptance will hardly come if occupational education retains or does not overcome its widespread image of training rather than education. It is hoped that this paper will shed some insights not only into ways of improving the process of occupational education itself which will lead to programs more sensitively geared to the "human awakening" of the students, but will also begin to refocus the myopic vision of so many whose support is critically needed in our increasingly technological age.

Therefore this paper is going to focus on areas which need clarification and refinement for an improved state of occupational education. Greater progress has been made in the cognitive and skills area in occupational education than in areas related to other human factors which may be critical to the successful integration of the newly gained cognitive skills into the total personality system of the student. Modern psychology has clearly demonstrated the necessity of total personality integration, that is, that for a person to achieve maximum growth, the various components of his personality must be in harmony and not in conflict.

The concept of the human personality is not a static one, but rather one of continuing dynamic change. The late Gordon Allport of Harvard, a leading personality theorist, viewed personality as a process of "becoming" guided by the past but oriented toward the future. In fact in one of his books entitled, Becoming (1955), he pointed out that such a view of personality is at the root of education and should be given full attention by the educator. But the point to be made here is that personality change will take place, be it positive when there is an integration of process components or negative when conflict promotes disintegration of personality. But how does this relate to occupational education? The relationship is really quite direct and is somewhat as follows.

For many years the focus in occupational education has been directed primarily at skills development. It is not until recently that more and more attention has been given to non-cognitive and non-skills development, which include such personality components as attitude formation and change, motivational dynamics, and patterns of interest. It is known now that it is not enough to impart a vocational skill to a 17 year old youth without preparing the rest of his personality system to accept this skill, to integrate it as part of himself and to make it a source of self-identity. No matter how well trained an individual is, he is not educated until he learns to maximize the input of his training in terms of a productive output of activity whether this output be inner directed toward further self-development or outer directed as productive endeavor. And it is not until other spheres of education and more of the American public realize that occupational education today is attempting to educate the total man that wider acceptance into the general educational community will be achieved.

It is necessary that even greater attention be given those personality components which will allow for the fuller utilization of the skills achieved in occupational education. Here the psychologist can make a contribution and it will be the focus of the rest of this paper to address itself to several personality dynamics which are non-cognitive and non-skill in nature but which relate directly to the process of occupational education. First the notion of personality will be examined as a framework within which to relate the variables of attitudes, motives and interests to be considered.

It is hoped that the material will be presented in such a way as to provide a working model which can be the basis for assessing change which may be attributed to the total occupational education environment. In addition to providing such a model, suggestions relating to the identification and measurement of such change will be made.

PERSONALITY: A DYNAMIC CONSTRUCT

It is not the intention here to outline or summarize an undergraduate course in personality theory, but it is necessary to our model to demonstrate that the human personality is subject to change and how this change potentially relates to the process of occupational education. There are numerous personality theories, but the position of Gordon Allport seems to place a great emphasis upon the individual as an individual and seems to be consistent with observable behavior. Allport defines personality as "The dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environments," (1937, p.48). Several concepts need to be clarified in this definition. First one notes in the use of the phrase "dynamic organization" that personality is in a constant state of development and change, while at the same time bound together by a certain orderliness, system, or integrating function. The use of the word "psychophysical" suggests that personality is " ... neither exclusively mental or exclusively neural. The organization entails the operation of both body and mind inextricably fused into a personal unity," (1937, p.48). Finally the fact that personality is something and does something is defined by the use of the word "determine." In Allport's words: "Personality ... is what lies behind specific acts and within the individual," (1937, p.48).

This widely accepted theory posits that an individual is a dynamic entity founded in change itself. Allport also specifies how this process of "becoming" is kept flexible and provides for a limitless plasticity within the individual. He does this by demonstrating that motives, the well springs of behavior, are "functionally autonomous," that is, they are not completely dependent upon the past, but rather supported by the present and motivated by perceived future goal attainments. What an individual is striving to become or not become is the most important key to how he will behave.

So many psychologists have turned to the past to unlock the riddle of future behavior. But such theorizing almost forces one to accept the notion that personality, being a determined product of the past, predestines the future and that personality growth and development is restricted almost entirely by the strength of the past. Man would be little more than an inflexible mass of organic matter, bound by what he has been, with little control over what he can become. If this were the case, education would have a task of almost insurmountable magnitude, in trying to change or increase man's capabilities.

We should not go so far as to state that the past has no influence on the present or future for such a proposition is clearly inconsistent with behavioral evidence. The effect of the past is real and is strong, but the past does not have to be a sole determinant of the future. It is clear that in some individuals the links to the past are strong and may be deterministic of present or future behavior. But this is a sign of personal immaturity. In fact there is some evidence to state that the more present motives are directed by the past, the less the maturity of the individual and the less he has evolved from early biological or childish states. In the mature individual the experience of the past guide current modes or styles of behavior in much the same way as any learned process affects the present. It is true that present motives may spring from the past and may have their origins historically in the past, but as current energy sources are not controlled by the past. They remain flexible to the demands of the present and driven by the satisfactions to be derived from future goal attainments. Finally, it may be well to quote again from Allport concerning the functional autonomy of motives. He says:

> "(1) ... motives are contemporary, that whatever drives must drive now; that the 'go' of a motive is not bound functionally to its historical origins or to early goals, but to present goals only; (2) that the character of motives alters so radically from infancy to maturity that we may speak of adult motives as supplanting the motives of infancy; (3) that the maturity of personality is measured by the degree of functional autonomy its motives have achieved; even though in every personality there are archaisms (infantilisms, regressions, reflex responses), still the cultivated and socialized individual shows maturity to the extent that he has overcome early forms of motivation; (4) that the differentiating course of learning (reflecting ever more diversified environmental influence), acting upon divergent temperaments and abilities, creates individualized motives," (1940, p.545).

In summary, what motivates behavior, does so now, in the present. Behavior is not determined solely by the past, but rather has a basis in the historical past, and is the product of the here and now as oriented toward the future. The acceptance of this kind of a theory of personality sets the tone for a dynamic educational process. It is not sufficient to throw up one's hands and state that "Johnny is just a product of his upbringing and will never amount to anything." It is not only inconsistent with dynamic theories of personality, but it is pessimistic and could be detrimental to "Johnny." Not only does this type of an approach to behavior modification relate to the problem student, but also to the non-problem, well-adjusted student. For now the whole world is open to him in vast dimensions. What needs to be done is to provide the right stimulation and the proper inputs into the personality system, and then watch the growth and development. Such a theory makes behavior modification real and possible as well as providing a basis for developing motivation and shaping and changing attitudes in our students. The student need not be viewed as having come from an inflexible mold which will break rather than bend in yielding to proper stimulation.

In summary, individuals have autonomy. Current behavior can function with considerable freedom from the past, but a freedom influenced by previous learning and experience. To divorce oneself completely from the influence of the past is not only unrealistic but is sheer folly. On the other hand, to believe that all behavior is a function of the past is likewise unrealistic. For example, I may like to study art simply because I enjoy it for itself: one may trace some origin in the past, e.g., my parents' love of art, but this fact may not determine my studying art. The present satisfaction achieved is the motive and one need not go beyond that fact to assess unconscious tension states that find relief in the pursuit of artistic study. The motive may be present and conscious in this case--one of simple aesthetic experience.

With this dynamic basis of personality stated, we will proceed to develop the model further by discussing in some detail certain functions of or processes in personality as directly related to occupational education. We shall view them in terms of their value as concepts to the educational process and show how they concern us here. We shall look at three dimensions, namely, attitudes, motives, and interests, all viewed from the occupational education perspective.

ATTITUDES

Attitudes may be defined as affective orientations to referents. This definition follows the work of Dr. Helen Peak of the University of Michigan (1955). What it means is simply that attitudes always pertain to some referent object, situation, place, or person. Attitudes do not exist in isolation or in a vacuum. When we say that "his attitude is poor," we mean that his attitude toward some specific or class of specifics is poor. The word affective in the definition denotes that there is feeling tone to attitudes; in fact, without the dimension of affect, there is no attitude. For example, a student may dislike a particular subject such as graphics. He can be said to have a negative affective orientation to the referent graphics. We have not spelled out why he has such an attitude, how the attitude may manifest itself in behavior, or how the attitude may be changed. We have merely stated that his attitude is poor.

The concept of attitude should be quite clear for it is encountered within ourselves daily and is manifest to ourselves in our interpersonal relations. In order to relate attitudes to our purpose here it is desirable to take a functional approach to the discussion, that is, one related to the purposes attitudes serve. For this I wish to refer to the brilliant definitive work of Daniel Katz, also of the University of Michigan. Katz (1960) has shown that attitudes largely serve four basic functions, namely, an adjustive or utilitarian function, an ego-defensive function, a value-expressive function and a knowledge function. When viewed from this approach, the purpose of attitudes becomes clear and the dynamics that evoke attitudes can be recognized with the process of change specified. It serves our purpose here to discuss this functional approach in some detail.

First, the adjustive or utilitarian function of attitudes follows from the idea that the development and maintenance of certain attitudes serve useful purposes to the individual. For example, it is of value to me to have a positive attitude toward occupational education for I find myself earning my living to a large extent from work in the field. If I had a negative orientation toward occupational education, my personality system would be racked with dissonance created by the fact that I work in areas of no interest or value to me. Thus I would manifest conflict which is unhealthy to the process of growth within myself. Another example relates to the student who doesn't like graphics mentioned above. Since he is taking graphics, but since he does not like graphics, he has a state of dissonance within himself. He will attempt to relieve this dissonance in many ways, ways largely determined by the strength of the dissonance which is a function of the unpleasantness of the negative affect. He may attempt to reduce the dissonance through withdrawal by cutting that class or getting ill on those days he has that class. He may choose to show that graphics is not instrumental to his reaching his desired goals by not applying himself and not doing the expected work in the course. Many particular styles of behavior are possible to this student to reduce his dissonance including belittling other students, the teacher, the text, etc. It should be clear now what is meant by the adjustive or utilitarian function of an attitude. Such a function is based upon the fact that most individuals develop attitudes to maximize satisfaction and rewards in the environment and minimize dissatisfaction and penalties. Such attitudes depend on past and present perceptions of the utility of the attitudinal referent.

The next point to be made is how to arouse such attitudes for positive effect and how to change such attitudes if they are not conducive to the proper development of the individual, in our case the occupational student. To arouse such attitudes the teacher, or counselor, or whoever might be of influence upon the student has to activate relevant needs in the student so that the referent is perceived as good for or consistent with the objectives of the student. In our example, graphics has to be perceived as good and necessary to the career or to the objectives of the student, whatever they may be. This may imply that it might even be necessary to assist the student in modifying his objectives if graphics do not figure into the appropriate objectives of this individual student. The important point is, however, that he must perceive the utility of the course in graphics and not merely be told of its importance. If he is merely told of its importance without his actually perceiving its importance, further dissonance could be created and new negative defensive attitudes develop to reinforce the former negative attitude. Should this happen to our student, attitude change will necessarily be even more difficult to effect. To change adjustive or utilitarian attitudes, it is necessary that the attitudes and their related behavior no longer provide the satisfaction they once did, or that the goals and objectives of the individual be raised to such an extent that the attitudes do not serve a useful function. In the case of our student who hates graphics, it may be necessary to raise his vocational objectives in order for him to realize the inadequacy of his negative attitude toward a subject critical to his achieving his new raised vocational objectives. Obviously punishment for his negative behavior will not result in the desired change, but may further strengthen the negative affect toward the course in graphics. For then the student not only cannot perceive the usefulness of the course, but he has threatening and harmful experiences associated with it.

The second function that Katz ascribes to attitudes is referred to as the ego-defensive function. In this case the attitude arises from within the individual and attaches itself to a convenient external referent. Within the adjustive function, the attitude arises from the external referent directly. Therein is the essential difference between these first two functions; a difference that is critical to the arousal or change of such attitudes. In the example of the defensive attitude the individual is attempting to protect (defend) himself from acknowledging certain truths about himself or certain external realities. It is a mechanism that allows the individual to live with himself more comfortably. The well known defense mechanisms of projection, rationalization, over-compensation and so on are good examples of behavioral components of such attitudes. Our student who hates graphics and therefore belittles it as a subject, and refuses to acknowledge its value to him, may be doing so not in a uniquely utilitarian sense as previously described, but rather in a defensive sense. He may know that graphics will demand more skill than he is able to provide. He may know of certain basic ability gaps within himself which will be manifested to himself and to others in the graphics course. Thus the problem is within himself in terms of certain ability weaknesses and he attacks graphics in a negative way, refusing to acknowledge its value, and thereby defending his ego from failure in something important. Graphics therefore becomes the referent of the negative attitude only because it is a convenient outlet for building one's own defenses.

It follows clearly that the mechanisms of defensive attitude arousal and change are different from those of the adjustive or utilitarian type of attitude. In this case, Katz points out, the major mechanism of arousal is one of frustration. For our purposes it would be a rare case in which we would want to arouse ego-defensive attitudes in occupational students. For the very nature of such attitudes is to protect the ego from reality and flight from reality is hardly a worthwhile objective. More often, we may want to change such attitudes in order that our students may grow and acquire through learning experiences those things necessary to their educational development. Changing such defensive attitudes is difficult, indeed, for the development of stronger ego-defensiveness is a real possibility.

The basic mechanisms of such change involve removing the threat which is causing the defensive attitude and helping the individual to acquire insight into his defense system. In the case of our graphics hater, again, perhaps the root of his problem lies in his inability to grasp one basic component of graphics. It might be in his case, that postponing that course and providing for a makeup course in his area of inadequacy will remove the threat and thereby reduce the negative attitude toward the subject. When the student realizes why he hated graphics, he will be better equipped to handle similar problems in the future. Had no effort been made toward changing this defensive attitude with course failure resulting, the negative attitudes of the student might have been heightened and he may have even dropped out rather than face taking the course over.

The third function to be discussed here is called by Katz the value-expressive function. In this case the individual adopts attitudes consistent with his personal value system and consonant with his self concept. Unlike the defensive attitudes which protect the ego from itself, the expressive attitude manifests the ego to itself. The individual not only gives a clearer picture of himself to himself and to others, but he reinforces values he cherishes or wishes to be known. The current teenage craze for long hair may be expressive of a value of consistency with the peer group and independence from the adult world. It should be clear that value-expressive attitudes are critical to sound mental health and maturity. They are the mirror of the personality and serve most useful purposes. To the educator the expression of such attitudes ought to be viewed with keen interest, since they may help unravel the mystery of the behavior of many students. In the case of our graphics hater, his dislike may be a reflection of his distrust of authority, as reflected in his particular teacher whom he perceives as authoritarian. Viewing behavior in such a way, we can better appreciate its dynamics and importance to the person manifesting such behavior.

There certainly may be alternative explanations of why our student hates graphics, but the important point to be made is that such behavior does not occur in a vacuum and the identification of and understanding of the personality dynamics at the core of the behavior will go a long way to supporting the individual, rather than driving him further away from the educational objectives you know he should be aspiring toward. It may be very desirable to arouse such attitudes in our occupational students not only to evaluate the relevancy of the attitudes, but to use them as reinforcements to behavior where possible. The use of appropriate cues will often evoke behavioral expressions of the attitudes. For example, the announcement that henceforth all male students in your school must not have long hair and must come to classes wearing a tie may evoke a whole range of reactive attitudes expressing values of the teenage groups. Observing the differential reactions of students might go a long way toward exposing their internal dynamics. Another effective way to arouse such attitudes is through open discussions where students are allowed to express themselves on a wide range of topics, especially if the topics are viewed by them as controversial, *e.g.*, the current Vietnam issue. Arousal of value-expressive attitudes is really not difficult, though often very important or even critical, since such attitudes express that uniqueness to which Allport referred in his definition of personality.

It is possible to change such attitudes and it may be often desirable to do so in such cases as that of our graphics student. The key to change is that of creating, gently and carefully, within the student a discontent either with his self concept and its values or with his other attitudes if perceived as inappropriate to his true objectives. In reality, this is what education is largely all about. In occupational education as well, the student must be educated to function with a skill rather than merely to be trained in a skill.

Finally the fourth of the functions to be discussed here is the knowledge function. Such attitudes find their dynamics in the need to understand, to know, to have order and clarity, to reconcile the self with the world. Such attitudes provide foundations upon which to build and function; they provide standards or guides which promote a certain consistency to life. In the case where a student perceives a given course of study as providing a consistent framework upon which he can aspire to his career objectives, positive affect will be associated with the knowledge gained, not only in the utilitarian sense, but also for the sake of the knowledge itself. The axiom that "truth is rewarding" is a good example of an expression of positive affect associated with knowledge and truth. The basis of change of knowledge attitudes lies in creating again a discontent with the current attitudes by providing new and more meaningful experiences. In this way the person realizes the inconsistency of the old attitude in terms of the new knowledge gained and thus modifies his attitudes to resolve the discontent. Again the purpose of education in respect to changing such attitudes should be clear: a genuine thirst for knowledge has to be created, but unfortunately there have not been enough thirsty students.

We have spent considerable time identifying various attitude functions for our model which are likely to be present in our students and we have suggested general mechanisms for change. But it would be naive for us to stop here. It is time to suggest some specific methods by which attitudes might be evaluated and change measured. Here I think we can look to industry for practical and efficient techniques. It would be ideal if each student could be analyzed in depth and a specific course of action detailed for him. This process would give us excellent measures of how effective we are being in promoting or changing attitudes in order that our graduates may be able to function not as trained robots, but as educated human beings with specialized skills. Certainly I am not proposing that in depth studies to assess change in attitudes of occupational students not be carried out where feasible. But such studies would require professional behavioral experts working in a detailed manner. If such is possible, it should complement other less specific or more global techniques. But reality often dictates the use of less expensive and quicker methods.

What I should like to propose is the creation of specific attitude instruments for use in occupational programs. The purpose of such instruments would not only be to assess the individual progress of each student, but also to evaluate the total education effectiveness of the occupational programs. Just as industry often takes periodic pulse readings of employees through attitude and morale surveys, so should occupational educators. The creation of a Vocational Morale Index is certainly within the realm of possibility. The specific format of such an instrument could be varied, but should be simple enough to be administered in groups and have sufficient reliability so as to be able to be used over again with the same students to provide an index of change. For example, the instrument could be given when students begin a new program, and then at the midway point, and finally at the finish. If the measured attitudes have not changed or have taken a negative route, it would be clear that something is wrong. Now certainly the construction of such instruments would not be that simple and would require considerable effort. But I can see no reason why the instruments could not be developed. It is conceivable that many forms depending upon program levels or types, geographic areas, socio-economic factors, age and experience of the students and so on would have to be developed if such a process were to be tried on a large scale. But it is likewise true that for a given school such an instrument could provide useful data relative to program successes or failures to the teachers, counselors, and administrators. The classic book by Allen Edwards (1957) would provide a good methodological foundation upon which to build such a Vocational Morale Index. Not only, however, would the use of such an instrument provide non-cognitive and non-skill feedback of program success, but it could also be the key to understanding levels and natures of attitudes in individual cases. Data based upon daily observation coupled with instrument profiles could provide the key to understanding the functions of attitudes as discussed above and shed insight into desired avenues of arousal or change as the case might be.

It is very interesting to note that in many of the training programs under federal sponsorship aimed at the underqualified adult, world of work orientation training is given. The expressed purpose of such training is the development of proper attitudes toward self, others, work and life generally. The programs are often run on a knowledge basis, that is, if these adults are taught what ought to be done, they will then do it. Such an oversimplification of attitude change is frightening to the social scientist. Knowledge does not imply action or change. As a matter of fact, it is highly probable that many of these underqualified adults will emerge with poorer attitudes because attitudes will have been driven further down into the personality system and harder to recognize, but no less potent.

It is necessary to understand the function of certain attitudes before change mechanisms can be tried. What may work for one individual with a certain apparent attitude may not work for another, not only because it is not the same individual, but also because the attitude may be serving a different function within the personality dynamic. The principle behind world of work orientation is excellent and perhaps would even have relevance to occupational programs in our secondary schools. But the current process used is often inappropriate to the desired outcomes. The use of some type of sensing device would give a basis for judging how much, if any, change is taking place.

I would like to suggest that the creation of a trial Vocational Morale Index be attempted by interested scholars and validated. It could be a simple key to provide many insights valuable to program success. Industry has been using these techniques for years with considerable success. If such is possible in industry as varied as it is, why is it not possible in occupational education? While it is not the purpose here to detail such a process of identifying and measuring certain personality variables, it might be well to point out that the instruments could take on many varied forms including multiple choice items, true-false statements, likes, dislikes, neutral items, agree-disagree sentences, rating scales, ranking procedures, other scaling techniques ranging from simple unidimensional models to multidimensional techniques, critical incident techniques, open ended questionnaires, free associations, structured and scored interviews, etc. The realm of possibility for constructing specific attitude measures is extremely great and what is needed is a concentrated research activity related directly to this task. A simple review of the educational literature demonstrates a noticeable lack of discussion of techniques of attitude assessment specifically in occupational education. Yet the need is great, the difficulties surmountable, and the potential value great. It is through such measures leading to the continued and improved education of the total man that occupational education will more and more achieve its rightful and deserved role in the legitimate educational community.

MOTIVATION

We have just discussed the nature and function of attitudes and suggested potential arousal, change, and measurement techniques. In this section we shall add to our model the concept of motivation. Research on this topic is vast. For example, a recent book by Cofer and Appley (1964) entitled, Motivation: Theory and Research, references over 2200 publications related to motivation which is not a complete bibliography, but a selected one. It is also true that there are many varied theoretical approaches to motivation depending upon whether one might have, for example, a psychoanalytic or an existential background, a learning theory or an hedonic background, and so on. Even within the general theoretical fields there are many related or divergent trends. Far be it from the purpose here to synthesize this more than half century of research and theory into a unified approach to be applied to the occupational education setting. Rather, from among the many human motives such as power, aggression, affiliation, sex, fear, dependency, anxiety, achievement, etc. we shall select one which is of direct relatedness to occupational education. That motive is achievement.

The empirical history of achievement motivation begins in the late 1940's with the work of David McClelland and has been continued up to the present by many distinguished behavioral scientists. The latest major publication is entitled, Achievement Motives: Theory and Research, by Atkinson and Feather (1966). McClelland (1955) took the position that motives are specific and that it is proper to isolate certain motives and to study them in depth, much analogous to the study of attitudes.

In order to establish an immediate reference point, I should like to define motivation in its broadest sense after the fashion of Atkinson (1958) as the arousal of a tendency to act to produce one or more effects. Such a definition avoids many theoretical controversies and is adequate for the purpose of this paper. Keeping within the framework of this generic definition of motivation, we shall define the achievement motive (often referred to as nAch, or need for achievement) as a tendency to strive for success in situations involving an evaluation of one's performance in relation to some standards of excellence.

Before we discuss achievement motivation in some detail, we should refer to one very popular theory of motivation which of late has been considerably applied to the world of work setting. The theory is that of Abraham Maslow (1954) which has been called a need hierarchy theory. Basically the theory postulates that the satisfaction of one need is prepotent to the arousal of another need and that need satisfaction is ordered in a hierarchy. The hierarchy from the lowest order needs to the highest order needs is (1) physiological needs such as hunger and thirst; (2) safety needs such as security and fear of the unknown; (3) love needs such as affiliation and affection; (4) esteem needs such as self-respect and respect from others; (5) self-actualization needs such as self-fulfillment and total personal development. This hierarchy is not absolutely fixed, but rather allows for certain reversals in various situations. It is best to say that lower order needs are largely satisfied before higher order needs have genuine motivational strength. The implication of the theory is relevant to us here, for it is, as Maslow (1955) points out, a theory of growth motivation. That is, behavior resulting from the arousal of such needs is goal-directed and predisposes one to achieve higher order goals as lower order goals met. It is a theory very consistent with the McClelland theory of achievement motivation.

Maslow says:

> "So far as motivational status is concerned, healthy people have sufficiently gratified their basic needs for safety, belongingness, love, respect and self-esteem so that they are motivated primarily by trends to self-actualization (defined as ongoing actualization of potential capacities and talents, as fulfillment of mission or call or fate or vocation, as fuller knowledge of, and acceptance of the person's own intrinsic nature, as an unceasing trend toward unity, integration or synergy within the person)," (1955, p.8).

Then in description of the self-actualized person, he lists thirteen traits: (1) superior perception of reality; (2) increased acceptance of self and others; (3) increased spontaneity; (4) increased problem centering; (5) increased detachment; (6) increased autonomy; (7) healthier emotional tone; (8) greater probability of aesthetic experience; (9) increased satisfaction with human existence; (10) improved interpersonal relations; (11) more freedom of character; (12) better creativity; (13) heightened value system. It should be clear that a noble life goal is to achieve a self-actualization state, for it is through such a state that man genuinely has the autonomy to respond to change. Is not this critical in our technological age? Should we therefore not strive to provide an environment which assists our occupational students in aspiring toward self-actualization? Is not one criterion of educational success the extent to which students behave in a self-actualizing manner? It is felt that in a discussion related to motivation of occupational students some thought must be given to active growth motivation, that is, not only to the process whereby our students are trained in a skill which may to a large extent be habitual in nature once mastered, but also to the process whereby our student integrates this skill into his personality system in such a way as to lead him one step further toward his full self-actualization. If we do not create an environment in which the student sees his educational process as a means to his self-fulfillment, we have short-changed him. For when the environment changes, as it will in such a technologically based society, the student must have the desire to grow with the changes and the autonomy to respond to the changes. The changing nature of the world of work is so great that skills mastered today may be outmoded in a few short years. If the student does not have the capacity of continued and spontaneous growth, he will be worse off in the future rather than better off.

Maslow's growth motivation theory must be appreciated by all of us involved in the educational process. Insofar as our programs do not predispose our students to growth, the programs fail and should be evaluated as failures. It is so easy to evaluate a program as a success merely because all graduates obtained a good paying job within a short period of time after graduation. Yet, such a program could be a phenomenal failure in the long run if our students emerge as rigid rather than flexible and as set rather than responsive to change. The importance of such non-cognitive variables to occupational education has never been greater. (The author wishes to refer you to a very interesting article by C. K. Lipsman (1967) in a recent issue of Vocational Guidance Quarterly in which the Maslow theory is related to vocational choice.)

Achievement motivation theory is entirely consistent with the Maslow growth motivation theory. As stated above achievement motivation is a tendency to strive for success in situations involving an evaluation of one's performance in relation to some standards of excellence. Just as the pursuit of self-actualization tendencies needs to be fostered in our students so does the achievement motive. Perhaps one essential difference relates to the notion that the process of self-actualization is a continuous process of a long range nature, a disposition toward which one strives but does not necessarily accomplish at any given point in time. On the other hand the achievement motive produces states of immediate effect. It produces tendencies to succeed in tasks not only of a long range nature but here and now, such as passing a course with good grades, or mastering a technique with as much perfection as possible. The achievement motive may be a route to and a means of self-actualization.

The achievement motive also relates to the level of aspiration of a person. Lewin and his associates (1944) have adequately investigated this concept and should be referred to by all interested in the process of student growth. Cofer and Appley state: " ... it would be argued that the history of someone who has high nAch must be one of competition with performance standards or one in which the individual was expected by himself to do things well," (1964, p.763). It is probably true that persons high in nAch also have realistically high levels of aspiration, but not so high as not to be achievable. It has been shown empirically, for example, that people with high nAch have a tendency to select tasks involving risk of intermediate difficulty and thereby allowing themselves to achieve the task goal and experience the resultant satisfaction. On the other hand people low in nAch select either high risk or low risk tasks. The former does not lead to goal attainment, but rather to frustration and discouragement; the latter leads to goal attainment but with little or no sustaining satisfaction. Both high and low risk task undertaking do not reinforce the achievement motive, but instead lead to high anxiety or frustration and to a stifled desire to excel. The point to be made is that our students need to be nurtured in respect to achievement motivation so that they neither become overachievers and thereby frustrated or underachievers and thereby not challenged. Proper encouragement, adequate support, and a healthy, though not threatening, competition will go a long way to foster the achievement motive.

Even more basic is the attainment of goals which will foster a respect for self and encourage attaining more difficult goals. Certainly, it is within the realm of the occupational teacher to structure an environment which allows the student to taste achievement by success at numerous undertakings. Nothing breeds success better than success. On the other hand, if the environment is structured so difficult as constantly to frustrate the student, he will develop a state of anxiety which he must relieve. His choices are many, but he will probably either drop out and flee the anxiety producing situation, or he will do barely enough to get by and will remain as distant as he can in his attempt to avoid the anxiety producing tasks. On the other hand, if goals are set that are too easy and are accomplished without challenge, the student may develop an exaggerated sense of ability only to be frustrated later on the job.

Our task here is to shed some light on how to assess whether or not our programs are making an impact in these areas. It is necessary to know what we are trying to assess. Atkinson and Feather (1966) state that there has been no real advance in the techniques of measuring differences in the achievement motive since 1949. Thus McClelland's early work apparently still stands as basic. His approach to the measurement of achievement motivation is sound in theory but difficult in practice. The basic hypothesis of McClelland's method is that when needs exist strongly in a person they will be reflected in fantasy states. For example, when a person is very hungry, he daydreams of food or when a person is not sexually satisfied, he dreams of sexual fulfillment. Thus if a person has a high need for achievement, it should be reflected in his fantasy world. McClelland devised a way to score a highly projective test technique to obtain an index of need for achievement. The test used is the Thematic Apperception Test (TAT) which is so widely familiar to many. Numerous empirical evidence supports the projective approach. A similar approach using the Iowa Picture Interpretations Test (IPIT) has been tried with some success. In the case of IPIT, the tested subject selects one of four statements about each picture, as opposed to freely discussing the picture as in the use of TAT. Both approaches require the use of a highly trained test technician for the administration and scoring. Such instruments are not practical on a mass scale to assess achievement motivation in our education programs.

Even Atkinson and Feather recognized this when they said: "Certainly an objective test would have the advantage of ease of administration and scoring whereas the coding of projective protocols of *n* achievement takes more time and requires more training," (1966, p.351).

Before we go on to make some suggestions relative to measures of achievement motivation that will be of evaluative merit in occupational education, we should view one other published test. That test is the *Edwards Personal Preference Schedule*. The *EPPS* measures the strengths of a number of personal needs within the tested subject. The needs measured are achievement, deference, order, exhibition, autonomy, affiliation, intraception, succorance, dominance, abasement, nurturance, change, endurance, heterosexuality, and aggression. Miller (1966) in a doctoral dissertation was able to distinguish between graduates and dropouts in engineering technology in a post-secondary technical institute using the *EPPS*. Those who graduated scored significantly higher in achievement than dropouts and the dropouts scored significantly higher in affiliation and nurturance than the graduates. It appears that the *EPPS* may be of some value to vocational programs where achievement motivation change is desired and needs to be measured.

What is needed more is similar to what is needed to assess attitude change, where we suggested some type of a vocational morale index fashioned after industrial techniques of assessing attitudes. McClelland (1965) in a recent article states that there are three ways to measure motivation. The first method involves asking the subject. Allport reinforces this idea when he says:

> "When we set out to study a person's motives we are seeking to find out what that person is trying to do in this life, including of course what he is trying to be. I see no reason why we should not start our investigation by asking him to tell us the answers as he sees them. ... Most people, I suspect, can tell what they are trying to do in this life with a high degree of validity, certainly not less on the average than the prevailing validity of projective instruments," (1962, p.171).

Also included in this first method are questionnaires, tests, and other self-report inventories. The point is that the subject furnishes you directly with the information. From the oral or written information obtained, you infer by whatever techniques you select for reasons of reliability and validity to the motive state. McClelland (Cofer and Appley, 1964) warns, however, that when measuring achievement with this direct approach one must distinguish between need for achievement measures (nAch) and value of achievement (vAch) measures. The former is actually the measure of the achievement motivation process whereas the latter is the measure of the conscious desire to achieve. Certainly these are different, but both are important with one serving to reinforce the other. McClelland feels that projective techniques as he uses are more geared to nAch, whereas self-report questionnaires tend to measure the conscious desire to achieve. Real evidence supporting this hypothecation is lacking.

I would like to suggest three approaches here that ought to be researched for their potential usefulness in assessing achievement motivation change in occupational education. The first would be an instrument which has a series of task statements which the student is asked to rate in terms of his perceived ability to perform the tasks realistically. Not only could such an instrument give an achievement level profile, but it could also give an index of over and underachievement which was discussed above. It is suggested that the instrument be used in conjunction with certain ability measures. The assessment of whether or not the student is prone to overachievement or underachievement could be made by matching his score on the motivation measure with his ability score. To my knowledge this approach is not in use in any area, especially not in occupational education. The second possible direct measure I would suggest would be an instrument in which the student would rate a series of jobs on some occupational prestige scale. This measure could lead to an index of the level of occupational aspiration of the student. For example, if he rates a welder as high as he rates an engineering technician, he might aspire no higher than to a welding career. Such an instrument needs considerable developmental research and could prove to be of no value. Nevertheless, it is worthy of research, for if it could be made to work, it would not only give a motivational measure, but also might give some index of occupational interest, a concept to be discussed later in this paper. In addition to serving a twofold purpose, it would be extremely easy to administer and would be objectively scored. The third direct approach I would like to suggest would be the construction of an attitude type instrument from which levels of achievement motivation might be inferred. Statements such as "luck is more important to success than ability" are the type of statement in mind. If the student strongly agrees with such a statement, it should be safe to infer a very low state of achievement motivation. Again much developmental work needs to be done, but it is worth the effort. The practical payoff could be great in terms of the benefits to occupational education.

The second major method of measuring motivation suggested by McClelland (1965) is by asking others, that is, to have the subjects assessed on motivation by others. This technique is used in education, business and government for many purposes. It certainly could be made to work in the assessment of motivational change in occupational education. Here too research on reliable assessment scales is suggested so that this technique might have the maximum power possible. Adequate research will help standardize techniques as well so that cross comparisons of programs can be used for whatever purpose needed.

Finally the third general motivational measure is that of observing behavior. This technique is especially applicable to assessing achievement motivation and its increase or decrease over time. There are many possibilities here and a few will be suggested. Sears (1957) suggests an approach in which certain behavioral objectives are set for each person based upon his abilities, etc. Thereupon these critical behaviors are observed in an anecdotal fashion. Another suggestion would follow the critical incident technique used in the Armed Services and in business to assess behavior. In this case whenever the student is observed involved in some critical behavior, it is recorded. Change in such behavior can be observed by comparing periods of time. If there appears to be significant increase in critical behaviors related to achievement over successive periods of time, it might be inferred that there is improvement in the need for achievement or the levels of aspiration. A third behavioral approach might simply be by the observation of certain assigned tasks and the manner in which the tasks are attempted. It is possible to have weights attached to levels of task accomplishments. What in effect is created is a behavioral sample test, but the behavior observed could be measured and scored as to achievement. As stated above, there are many possibilities within the behavioral observation approach. In fact, McClelland himself says: "Why not use that as a simple method of measuring motivation: how hard does the pupil work?" (1965, p.529).

In summary, we have further enlarged our model with the nature of motivation and viewed the growth theory of Maslow as well as the achievement theory of McClelland. We have stressed the critical importance motivation development in programs of occupational education and have suggested several approaches to measuring motives for the purpose of evaluating program success. It is generally held that motives are learned, and, if this be the case, let them be learned well while in occupational education. We would shortchange our students if we merely gave them a skill but did not give them the force to execute the skill with maximum power and flexibility to adapt to change.

VOCATIONAL INTERESTS

The final personality dynamic to be included in our model here is that of vocational interests. Guion (1965) defined interests as attitudes toward activities and stated that intense interests are motivating, for people do things suggested by their interests. The relevance of vocational interests and their relationship to other factors is also summed up in the statement by Edward Strong: "In general, his interests indicate the direction he should go; his abilities determine how far he can go; and his motivation, ambition, fight, determination, stick-to-itiveness indicate how far he will go," (1955, pp.188-189).

Unlike attitudes and motivation as related to occupational education, the concept of vocational interests has been covered very adequately in the technical literature and there is little that can be added here. To summarize the vast literature would be a task far more extensive than possible here. However, this paper would not be complete without mention of the concept, which is among those non-cognitive variables inherently related to occupational education. Perhaps one of the most lucid and comprehensive treatments of the subject can be found in the classic work of Donald Super and John Crites (1962) entitled: Appraising Vocational Fitness. I will take the liberty of presenting a lengthy quotation from that book which sums up the dynamics of interests within the personality structure:

> "Interests are the product of interaction between inherited neural and endocrine factors, on the one hand, and opportunity

> and social evaluation on the other. Some of the things a person does well as a result of aptitudes bring him the satisfaction of mastery or the approval of his companions, and result in interests. Some of the things his associates do appeal to him and, through identification he patterns his actions and his interests after them; if he fits the pattern reasonably well, he remains in it, but if not, he must seek another identification and develop another self-concept and interest pattern. His needs and his mode of adjustment may cause him to seek certain satisfactions, but the means of achieving these satisfactions vary so much from one person, with one set of aptitudes and in one set of circumstances, to another person with other abilities and in another situation, that the prediction of interest patterns from needs and from modes of adjustment is hardly possible. Because of the stability of the hereditary endowment and the relative stability of the social environment in which any given person is reared, interest patterns are generally rather stable; stability is further increased by the multiplicity of opportunities for try-outs, identification, and social approval in the years before adolescence. By adolescence most young people in developed areas have had opportunities to explore social, linguistic, mathematical, technical and business activities to some extent; they have sought to identify with parents, other adults, and schoolmates, and have rejected some and accepted others of these identifications and the related social roles; self-concepts have begun to take a definite form. For these reasons interest patterns begin to crystallize by early adolescence, and the exploratory experiences of the adolescent years in most cases merely clarify and elaborate upon what has already begun to take shape. Some persons experience significant changes during adolescence and early adulthood, but these are most often related to normal endocrine changes, and less often to changes in self-concept resulting from having attempted to live up to a misidentification and to fit into an inappropriate pattern, or to experiences which greatly broaden previously narrow horizons. Vocational interest patterns generally have a substantial degree of permanence at this stage; for most persons, adolescent exploration is an awakening to something that is already there," (1962, pp.410-411).

It is generally agreed that interests are relatively stable, at least by the college years. Much longitudinal research over considerable periods of time confirms this stability. Since such stability does seem to exist, the concept of vocational interest should play a significant role in the process of occupational education. To the extent possible or desirable, students should be channeled into tracks at least parallel with their patterns of interest. It is fortunately true that many serious attempts at the determination of vocational interests have been made in occupational counseling through testing and related procedures. It is perhaps appropriate to list in a summary fashion some of the more widely used measures of vocational interests. No attempts at serious evaluation will be made because of the wealth of published research and literature on the measurement of interests and on the specific instruments cited below. The list is by no means inclusive of all interest measures, but, rather, typifies those which have received considerable use. They are:

1. Allport-Vernon-Lindzey Study of Values
2. Brainard Occupational Preference Inventory
3. California Occupational Interest Inventory
4. Cardell Primary Business Interest Test
5. Cleeton Vocational Interest Inventory
6. Gregory Academic Interest Inventory
7. Guilford-Shneidman-Zimmerman Interest Survey
8. Kuder Preference Record
9. Lee-Thorpe Occupational Interest Inventory
10. Michigan Vocabulary Profile Test
11. Minnesota Vocational Interest Inventory
12. Pictoral Interest Inventory
13. Purdue Job Preference Survey
14. Rothwell-Miller Interest Blank
15. Strong Vocational Interest Blank
16. Thurstone Interest Schedule

While we suggested several alternatives to the identification and measurement of attitudinal and motivational variables since there appear to be no adequate measures specifically related to occupational education, we offer here no new suggestions in terms of interest measures. The research has been prodigious and the development of measures continues in many spheres. One of the latest of which, and very promising, is the newly issued *Minnesota Vocational Interest Inventory*.

Vocational interest measures should be a part of every serious program of occupational education at the secondary and postsecondary level where young people are trying to mold themselves into careers consistent with their personality dynamics. The use of such measures in skills upgrading or adult continuing education or other such occupational training programs is far less meaningful and may indeed be rather inefficient and invalid for the purposes for which such programs are offered. Such is not true in the case of the young person aspiring toward a suitable vocational choice. Since there has been considerable success with interest measures, it seems that more widespread use should be made in order to achieve the educational efficiency that our times call for. Every effort should be made to reduce the trial and error approach to career choice. Such choice should be made as systematic as possible. This orderly approach to occupational education will reduce duplication and make for an efficient educational process which can be more responsive to the students.

SUMMARY AND CONCLUSIONS

The purpose of this paper was to shed some light on certain personality variables in occupational education. It was implied early in the paper that if occupational education is to be accepted more widely by other educators and the public as true education and not merely as occupational training, it must achieve greater acceptance into the total educational community. One way for such acceptance is through the constant search for ways to improve its relatedness to the total man. In other words, it must be kept clear that there is far more to occupational education than merely imparting a skill. The total personality system must be prepared and equipped to handle the new skill so that the person maximizes the potential of the imparted skill. It is one thing to give a person the psycho-motor habit patterns to perform a task of a given occupation, but it is quite another thing to make a productive worker out of a person. Most people can achieve basic job skills, but far fewer can become proficient workers. Insofar as formal occupational education programs merely teach a person an isolated skill rather than a method of utilizing a skill for self-fulfillment and productive output (when this is the objective), the programs fail. Fortunately, fewer and fewer programs are guilty of this inadequacy. Certainly there is a place for merely imparting skills into those who may simply want a new skill, but in the case where a career is being molded, imparting skills is far from enough.

We have attempted to build a conceptual model as a basis for measuring personality changes associated with occupational education. We indicated the nature of personality as dynamic, rooted only historically in the past but oriented toward the future. We then proceeded to the nature and functions attitudes play in this dynamic personality system and suggested ways to arouse and change these attitudes. We concluded that section by suggesting a *Vocational Morale Index* as a measure of attitude levels and change in occupational programs. Then we turned to the concept of motivation and summarized two theories, one of growth motivation and one of achievement motivation. Several ideas related to measuring motivation levels and change were presented. Finally some mention was made of vocational interests and their measurement.

It is concluded that genuine effort must be made in respect to the identification and measurement of non-cognitive and non-skill aspects of occupational education. Real progress has been made in interest measurement, but far less progress has been made in attitude and motivation measurement. The position is taken that without greater concern for these factors, occupational education will be perceived at best as merely training and can never hope to gain greater acceptance as a legitimate educational process.

The objective of occupational education must be more than simply producing bodies equipped with a salable skill. In the words of Atkinson and Feather (1965) we must create *achievement oriented personalities* who will be responsive to growth and the demands of technological change. A rigid person may function efficiently for a while when the challenges of growth are not demanding. But when plasticity is required, this same person who stands still falls behind. Thus the rigid graduate in whom the seeds of achievement are not planted will not grow in the challenge of economic life. Our technology is exploding with such phenomenal force that even the person who has the capability for growth and responsiveness to changing demands is often prone to be overwhelmed. What then will happen to the occupational student who may be conditioned rather than educated? The need to evaluate our programs on the level of personality variables is paramount. It is hoped that the model presented in the paper will serve as a basis for research in the identification and measurement of these variables which are so critical to program success. Gross recently contributed an excellent article on the preparation for work life. In the article was an emphasis for a broadened vocational counseling, an emphasis certainly consistent with the theme of this paper. A quotation from the article witnessing the necessity for an increased scope serves as a fitting close to this paper:

> " ... to enable a person to grow into a style of life that includes learning to live in a community and to change from one community to another, securing learning to handle the changing educational requirements of one's children and oneself, using recreational opportunities for self-development, adjusting to the process of moving which may be expected to be relatively frequent, and perhaps providing the individual with some ideas and help in understanding the society and economy that often disturbs his occupational career so rudely," (1967, p.422).

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PROGRAM PLANNING AND EVALUATION

by

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PROGRAM PLANNING AND EVALUATION

Perfecting planning; program budgeting and systems analysis in the federal agencies grew out of the President's directive of 1965.

The resulting effort on the part of many federal agencies has carried over and influenced State and local government.

The application of systems development by industrial organizations has been profit-oriented. The application of systems development to government services has been service-oriented and thereby striving to provide the best possible combination of services with limited resources.

We who are dedicated to occupational education strive for effectiveness by providing for people the proper programs and for efficiency by doing them well.

My remarks will focus on planning and systems analysis pertaining to vocational education. We are concerned with the present status of programs and evidence of program results. We are concerned with how to present a continuous flow of evidence in a most acceptable manner.

Many of us know that each one here and the organization you represent can be a powerful force in perfecting public vocational education. While our country leads the world in volume of education, certain imbalances must be adjusted--the incidence of unemployment, dropout, delinquency, and inequality of education. Increasingly, these imbalances have caused us to look critically upon traditional methods of providing educational services that do not fully allow for those significant primary factors which affect the education of the individual.

Expectation is growing that modern concepts of education will be fully applied. These concepts encompass the total education of each individual as he grows and matures in American society.

ELEMENTS OF PLANNING

With increasing expectation of more effective delivery of educational services, systematic planning is demanded for a more accurate balance of programs in response to people and in consideration of available resources. This planning concerns itself with comprehensive vocational education which consists of three divisions of activity: (1) the effort directed toward initial educational development--that is, those efforts necessary to adjust each individual to a useful occupational and social role in American society; (2) retraining the education provided from time to time as necessary to help each individual remain productive and adjusted toward the American social system; and (3) continuing education directed to all individuals who may benefit from it vocationally as they mature in the American society.

Many educational institutions do not see their role as comprehensive, nor do they consider their program in the light of overall local and State programs, nor make meaningful comparisons between alternative programs or alternative ways of carrying out programs. Their tendency is to select and justify programs on the basis of intuition or tradition; to plan and budget in terms of object and activity, and to evaluate in terms of effort expended. Mr. Armstrong warned against evaluation of process.

One encounters planning in a vacuum, or compartmentalized planning, *i.e.*, each occupational department planning their school or State program based on minimal increase. The recent interest in "management by objective," or "program packaging" has encouraged State and local communities to conduct broad planning activities to reduce educational and other problems, *i.e.*, Model Cities, Cooperative Health planning, 5x5x5 State finance projects. Planning which is comprehensive must involve all agencies and organizations which contritube to the provisions of occupational education. Such planning considers in a rational and systematic manner the capabilities and contributions of agencies, organizations and systems (both educational and non-educational) which are essential to effectively deliver educational service.

Heretofore, vocational educators have presented a plan composed in most instances of pieces stapled together. What should a plan include to meet the most recent expectations?

Any agency or organization involved in planning for educational programs necessarily has a mission which is imposed by legislation, regulation, charter or other means. The mission specifies the organization's reason for existence, describes the general services or functions it performs and defines the limits of its jurisdiction and authority. The mission remains more or less fixed unless changed by law or other official action. For example, the mission of vocational education is to provide throughout the nation readily accessible programs of vocational and technical education for persons of all ages in all communities at all levels, which will enable these persons to enter and advance in the Nation's labor force.

Goals are established by the organization's leaders. A goal is a long-range specified statement of accomplishment toward which programs are directed. It may be as ambitious or idealistic as good judgment dictates, but it must be consistent with the mission. A time is not fixed for its achievement. A goal should be stated in terms of completely overcoming an educational problem or reducing it to the extent which the state of the art permits. A goal is not stated in terms of the current availability of resources, although it must depend upon the current state of knowledge. Broad goals will be set by local, State and Federal agencies responsible for overall comprehensive planning.

We should strive for considerable uniformity. Operating agencies and organizations covered by overall comprehensive plans will respond with *operational education objectives* appropriate to their respective mission; these objectives will be the milestones along the path of achievement of the goal.

An example of a program goal in vocational education is: to maintain and improve existing programs and develop new programs of vocational education directed toward persons with special needs at the secondary level.

An objective is stated in terms of achieving a measured amount of progress towards a goal or maintaining a certain measured level of education required by a goal during a specified interval of time.

An example of an objective for a State is: given tenth-grade students who are three years below average in reading level, to provide remedial reading, occupational education and placement for employment for 70 percent of the target group (10,000) at the end of the twelfth grade, at an estimated cost of $2,000 per student and ultimately reaching a target group of 50,000 students a year in five years. These are the beginning specifications of a comprehensive educational plan.

The mission, goal and objectives must be comprehensive in terms of geographical and population coverage. In addition, a plan should represent comprehensive plans of action for all agencies involved in mitigating all causes of occupational educational deficiencies. The plan should be constructed under the general framework of a goal which is stated in terms of educational status. Additionally, the plan which states the educational problems, their causes and related factors should also contain educational objectives quantified in terms of expected terminal behaviors in a specified time.

Operational educational objectives should be supported by curriculum objectives, which are stated in quantified terms and directed toward ameliorating specific educational deficiencies over similar time projections. Thus the plan must specify in quantified terms those activities which are to be carried out by the specified agencies or persons who will accomplish the curriculum objectives which, in turn, support the operational objectives in ultimate terminal experiences of the students served. The projected activities or plans of action are the heart of comprehensive educational planning. They constitute the blueprint for action, the commitment to do something calculated to help attain the desired educational status. These plans of action cannot be limited to classical educational activity but must encompass activities of other agencies which have responsibilities and authority for certain educational program areas; for example: socioeconomic conditions, health, housing conditions, working conditions and work opportunities are all factors which may adversely affect educational status, but which are not within the direct purview of official educational agencies. Thus, comprehensive educational planning must consider plans of action to be carried out by agencies which are not educational but which are directed toward these factors. This points to operations analysis.

OPERATIONS ANALYSIS

Operations analysis provides information not decisions. Analysis makes appropriate material available to decision-makers; and if decision-makers will not use it, then the operations analysis cannot be effective. Decision-makers must be taught the use and the import of operations analysis. As I petitioned the RCU Directors, I petition you to find ways to effectively influence decision-makers, if you are not now doing so.

Problem identification is of critical importance. The problem definition may not be too narrow, individuals working in operations analysis must develop social sensitivity. *It is on this critical point that educators might lose control to those acquainted with program budgeting and systems analysis techniques.* We must be careful of the way in which results are communicated. We must be careful that the data presented is meaningful and correct. We should not develop analysis in a vacuum, and we should describe realistic expectations as a result of analysis.

Maintaining and expanding a program of public vocational education depends greatly upon the proper *utilization of reliable sources of data* and the sophisticated analysis of these data and consideration of the other vocational education activities which are available. In many public or private organizations the program goals, the program objectives and the budget are expressions of purpose and program; hence their preciseness may be a reflection of past performance including both successes and failures.

Many decisions must be made at many levels; they must be viewed as best choices among several alternative programs in the context of balancing needs against resources. It would be fair to say that with the exception of planning for the erecting of buildings, most program decisions have been confined to meeting immediate needs and planning for the use of presently available resources. Our task is being expanded to include that of more accurately predicting needed programs and necessary resources for several years in advance. Considerable evidence shows that too narrow a focus on the immediate present and too much reliance on the past structure of administration and operation restricts the utilization of data and limits imaginative assumptions too early in the formulation of many plans. We do not know what structural changes will occur in administration or the amount of resources devoted by the several levels of government to meet the needs of the student population to be served through vocational education. Therefore, the focus should be on what needs to be done to and for people who will fill occupational roles. We must focus on what is right and not worry so much about who is right.

Usually a considerable amount of confusion surrounds an area of activity before it receives definitive attention, such as the needs of inner-city disadvantaged youth and health care. Individuals with considerable experience will need sensitivity in order to state problems in a manner which defines them sufficiently to suggest methods of action. Confusion may result when conditions change from normal or static. Abnormal situations pressing on society may bring problems into sharp focus. Imagination, the ability to perceive problems and knowledge of problem areas are required before one may begin to solve them.

Changing value systems bring into focus dormant problems which otherwise might have been ignored. Observations may be of many kinds. Facts and values are usually combined in a creative process before serious consideration is given to the solution of problems or until they achieve priority attention. Postulates are sorted out and combined into theories from which assumptions are ultimately derived. Seldom are all facets of a problem entirely new or unique. New observations combined with old practices may turn up new probabilities of solutions. Expertise is necessary to frame goals and measurable objectives.

Research people like yourselves and those you may train can possess the skills necessary for doing high quality systems analysis. Intellectual honesty must be maintained as program plans are developed and alternatives presented. Decisions involve selection of the best alternatives from many possible choices. Decisions are made on the basis of combined facts and values. Facts may be misleading since they are often derived from accepted practices and beliefs which may no longer be valid. One example of an accepted belief was the saying, "Everything that goes up comes down," and space exploration has blown that formerly accepted belief. The same may be true for many of the accepted educational beliefs.

Values are usually derived from accepted and individual practices. The validity of the combination of facts and values leads to acceptance or rejection of this combination when it is presented at the proper time in acceptable language by the right individual to the ultimate decision-makers. Modern management demands that alternatives be prepared and accompanied by hypothetical results, both desirable and undesirable. Otherwise, a course of action may be relatively meaningless. Action taken on this basis creates an image of the reliability of the organization or of the individuals taking the action. Whether recognized or not, action is taken on the continuum of uncertainty and, most appropriately, from the position of certainty. It must be our desire as planning evaluation and research specialists to strengthen the hand of the decision-makers.

PROGRAM EVALUATION

A point I have not touched upon until now is program evaluation. The planning process is obviously not complete without a specific plan for evaluation. As noted previously, the criteria for setting objectives and plans of action require that they be measured. Program evaluation is a process of determining the extent to which specific objectives and predetermined levels of operation are attained. Management uses program evaluation to insure that intentions are actually realized and that the desired effect is achieved. Evaluation is not a simple task nor an easy one. Many difficulties are encountered. The basic responsibility of evaluation is the appraisal of services in terms of their impact on the problems of the people that vocational education is intended to serve. In spite of many difficulties, the evaluation process must be performed. Without it, no plan of action can be valid and reasonably expected to be carried out successfully. Evaluation is thus used in all phases of program planning and program operation, it represents a feedback mechanism that consistently provides information necessary for the appraisal of any phase of the operational process. It reduces the gap between foresight and hindsight. The group assembled here is well qualified to select the method or methods to be used for evaluation of educational services.

The uniform development and use of a basic information system will facilitate evaluation of program progress at any time interval and help to establish the cause and effect relationships.

I hope that I have given you an overview of a task that we are all dedicated to accomplish. I would like to make a couple of statements which will further reinforce what I have tried to present.

Joe Hall of Miami said, "One thing we all know is that change will come whether we plan for it or not, but the piecemeal approach of the past will no longer provide the kinds of solutions our schools need today. We can no longer move from one program to another in linear fashion, cutting an uncertain path as we go. We must have a clear idea of the ultimate destination of all of our programs in education and we must map our itinerary with the utmost care and precision."

Simply stated, this means that educational leaders must give attention to the process by which changes are made as well as to the changes themselves. We need to bring more systems design to educational planning. This is nothing new, really. We live in an era of systems--systems analysis, systems management, systems engineering. Systems designed research is transforming the structure of American industry and technology. Systems strategy applied to education would help us look at problems more comprehensively to define mission, goals, and objectives more clearly, and to plan and evaluate programs much more effectively than ever before.

Fishman of Colorado stated, "Industry and government are looking to vocational education, asking why the job of providing skilled manpower has not been done. They will not consider the fact that vocational education has for many years been playing second fiddle to college preparatory oriented programs, but take the point of view that a great deal of money is now being spent on vocational education."

We have and will have, increasingly so, serious competition for resources. Alice Rivlin, Assistant Secretary for Planning, of the Department of Health, Education and Welfare commented recently, concerning information to support budget, "For some programs we had good information. For others we had less good, and vocational education, as the Advisory Commission has pointed out, was one of the weak areas. It's very hard at the national level to see what the money is being spent for, what are the characteristics of the students and what is happening to them. We've learned that hard information on the effectiveness of Federal programs is very hard to come by. This is true of vocational education, but it is true of almost everything else. There's nothing very special about vocational education in this regard."

I have not mentioned cost/benefit, but it's in the picture. It's going to be a very long time before the cost/benefit analysis can have anything useful to say about big decisions. This is not to discount import and usefulness of cost/benefit. There are a number of reasons; one is that the benefits are difficult to measure. We really need more work on smaller decisions--the decisions of how to run a particular program better and how to gain the proper balance of programs in response to labor force requirements and the requirements of people.

I will enumerate a few other factors that are believed to be of critical importance, but I will not elaborate upon them. They are the several groups served through public information about vocational education; models for planning; Federal, State and local relationships; and the uniformity of terminology.

Is it impossible to develop uniform mission, goal, and objective statements, and uniform Evaluation, without utilizing a uniform terminology? We believe that "Standard Terminology for Local and State School Systems" will be a great aid in establishing uniform terminology. This has been developed by the U. S. Office of Education's Terminology Compatibility Branch, Division of Statistical Operations. The Taxonomy of Occupational Titles and Instructional Programs, developed by the Division of Vocational and Technical Education in cooperation with the Department of Labor, should also be useful in forming a data base in planning, evaluation and reporting. I believe it would be difficult to overstress the important contributions this group can make to State vocational education planning and evaluation.

Immense amounts of information are needed for establishing vocational program projections. Information may be provided by surveys or, in many cases, by syntheses of available statistical and qualitative data. But regardless of the types of evaluative strategies or evaluative studies conducted or the methodology utilized, studies should be initiated in connection with or after consultation with the State Directors of Vocational Education or their designated planning officers. Research on Evaluation carried out independently because of individual interests should be relegated to a very low priority. The idea of research on Evaluation being independent of program operation in this particular arena of activity does not seem to be appropriate. All that is said about program planning and information systems is not to imply that these will do the decision-making, but that they will increase the capability of the decision-makers at the various levels of activity in local, State and Federal programs.

APPENDIX

PLANNING AND PROGRAM COMMITTEE

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PROGRAM

Sunday, May 5, 1968

7:00 p.m. Registration
8:00 p.m. Reception, Hayes Barton Room

Monday, May 6, 1968 - Board Room

JOHN K. COSTER, Presiding

8:00 a.m. Registration
9:00 a.m. "Overview of the Seminar" JOHN K. COSTER
"Identification and Measurement of Student Output Variables" CHARLES M. ARMSTRONG

Recess

Small Group Discussion
Analysis and Synthesis

Lunch

1:30 p.m. "Selected Non-Cognitive Correlates in Occupational Education" JOSEPH E. CHAMPAGNE

Recess

Small Group Discussion
Analysis and Synthesis

Tuesday, May 7, 1968, Board Room

HAROLD STARR, Presiding

9:00 a.m. "Measurement and Appraisal of Competencies"
WILLIAM R. GRIEVE

Recess

Small Group Discussion
Analysis and Synthesis

12:00 noon Adjourn to North Carolina State University Faculty Club

12:30 p.m. Luncheon

"Program Planning and Evaluation" OTTO P. LEGG

2:30 p.m. Tour of Research Triangle Institute
CHARLES H. ROGERS, In Charge
Coordinator of Services and Conferences,
Center for Occupational Education.

Wednesday, May 8, 1968, Board Room

GLENN Z. STEVENS, Presiding
Professor of Agricultural Education
Pennsylvania State University, University Park
Member, AVA Research Committee

9:00 a.m. "The Value Structure of Society Toward Work" ARTHUR R. JONES

Recess

Small Group Discussion
Analysis and Synthesis

Lunch

1:30 p.m. Participants' Reports of Research Projects Related to Evaluation

Thursday, May 9, 1968, Board Room

T. CARL BROWN, Presiding
Supervisor of Distributive Education
North Carolina State Department of Education, Raleigh
Vice-President for Distributive Education
American Vocational Association

9:00 a.m. "Overview of Program Evaluation and Research Needs" JANE PERRY

"Developing Strategies for Program Evaluation--Workshop Sessions" JOHN K. COSTER

Thursday Evening, May 9, 1968, Ballroom

SELZ C. MAYO, Presiding
Professor and Head, Department of Sociology and Anthropology, North Carolina State University
Acting Director, Center for Occupational Education, 1965-66

6:30 p.m. Banquet

Introduction of Guests

"The People Left Behind: Implications for Vocational Education" C. E. BISHOP, Vice President for Public Services
Consolidated University of North Carolina, Chapel Hill
Executive Director, The President's National Advisory Council on Rural Poverty

Friday, May 10, 1968, Board Room

CHARLES H. ROGERS, Presiding

9:00 a.m. Continuation of Workshop Session

Reports by Workshop Chairmen

Reactions by Consultants

"Evaluation of Seminar"
BERT W. WESTBROOK, Assistant Professor of Psychology and Specialist in Tests and Measurements, Center for Occupational Education

"Summary of Seminar" JOHN K. COSTER

12:00 noon Adjournment